TECHNOLOGY DEPT.

Telephone Engineer and Management

JANUARY 1, 1957

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THE NATIONAL TELEPHONE MAGAZINE

vol 61 #1

FEATURING IN THIS ISSUE

- SECURING TOP RESULTS FROM WORK ASSIGNMENTS, by E. W. Fair
- PROFITS & SERVICE THROUGH BETTER MANAGEMENT, by James L. Morrison
- WRONG NUMBERS, by Eleanor Howard
- FUSELESS PROTECTION, by John S. Reed

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SUPERIOR Parallel LINE WIRE

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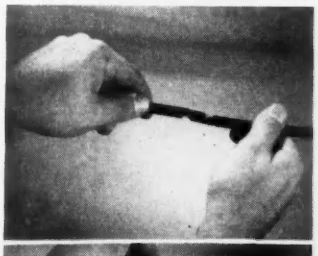
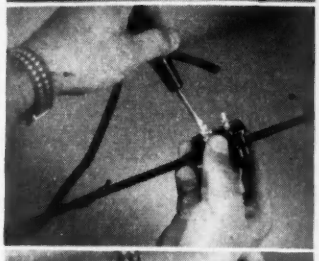
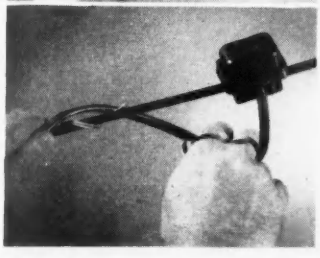


Skin line wire insulation.



Fix terminal in place on line wire.

Connect drop wire.



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AUTOMATIC ELECTRIC

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TELEPHONE ENGINEER & MANAGEMENT

JANUARY 1, 1957
Vol. 61 No. 1

THE NATIONAL TELEPHONE MAGAZINE

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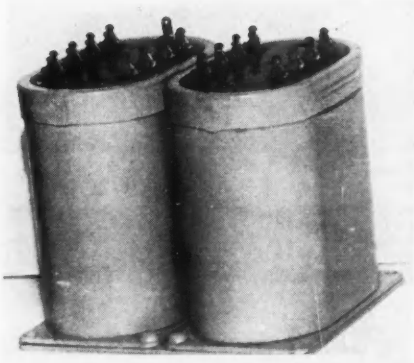
FRONT COVER

Over 425 telephone industry members attended the 49th annual convention of the Florida Telephone Association at the Daytona Plaza Hotel, Daytona Beach, Fla. Front cover photo shows three officers of the Florida association: Left to right: FRED S. McGEEHEE, 2nd. vice president; MISS JOSEPHINE POPPLETON, secretary-treasurer; M. N. DREW, president.

IN THE NEXT ISSUE

The January 15th issue of TELEPHONE ENGINEER & MANAGEMENT will feature these helpful articles: (1) "Profits & Service Through Better Management: (Chapter II) by *James Morrison;* (2) "Explosives For Plant Construction," by *R. G. Tungate;* (3) "Planning Plant Practices," by *T. DeWitt Talmage;* and (4) "Modern Cable Construction," by *John S. Reed,* — plus *all the regular TE&M features.*

REPEATING COILS
FAR BELOW ACQUISITION COST



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Brand new, in original package. Regular price $33.50. Our price, per pair, less than 10: $21.50
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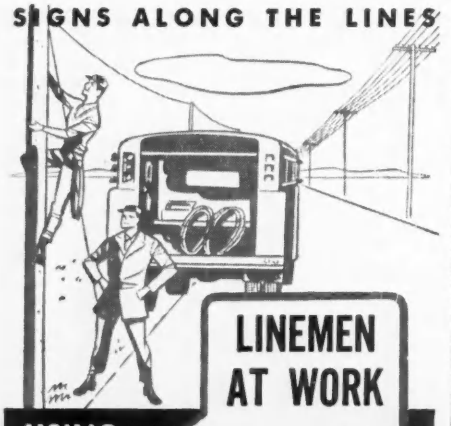
SIGNS ALONG THE LINES



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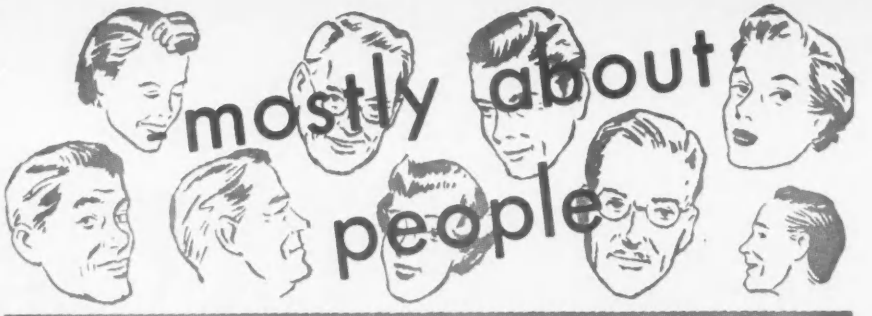


ACROSS THE EDITOR'S DESK

"Two Issues Per Month"

AFTER 48 YEARS of publishing TELEPHONE ENGINEER & MANAGEMENT we are now preparing two issues per month for your reading. Starting with this number your subscription will bring you 24 issues per year. We hope you will like the new format and contents under this new policy.

Loyd F. Morrison

LOYD F. MORRISON, that grand gentleman of Iowa Independent telephony, has been honored by the Iowa Independent Telephone Association. He has been named an Honorary Director which is quite an honor. Loyd served the association for nigh onto 30 years as a director, officer, worker and booster and we join with that association in saluting him for his service.

He is now retired and with Mrs. Morrison is living at 1109 Main Street, Grinnell, Iowa. While you are noticing the contents and authors in this issue you will notice the name of *James Morrison*, a son, who is continuing the Morrison name in the Independent ranks of the telephone industry, and we predict a very bright future indeed for Jim!

Harold A. Hanson

HAROLD A. HANSON, secretary-treasurer of the Central Telephone Company and affiliated companies, was honored in Chicago on his recent retirement. The affair was arranged by *Judson Large*, president of the companies, during the recent USITA convention and was held on October 15.

On hand to honor Mr. Hanson were executives and associates in the various companies in the Central group plus many members of the financial world flanked by executives from other telephone operating companies. Several lovely gifts were presented to the Hansons on the occasion.

Earle Blomeyer

IT WAS NICE to hear that Earle Blomeyer has been made an officer and director of the Gladwin Plastics Company, Atlanta. The announcement is dated January 1, 1957. Earle is well known to the telephone industry as is the Gladwin Plastics Company. After leaving the telephone industry last year Earle has since moved to Atlanta where he has been making his home. We are indeed happy to welcome him back to the telephone industry where he has spent practically all of his business life.

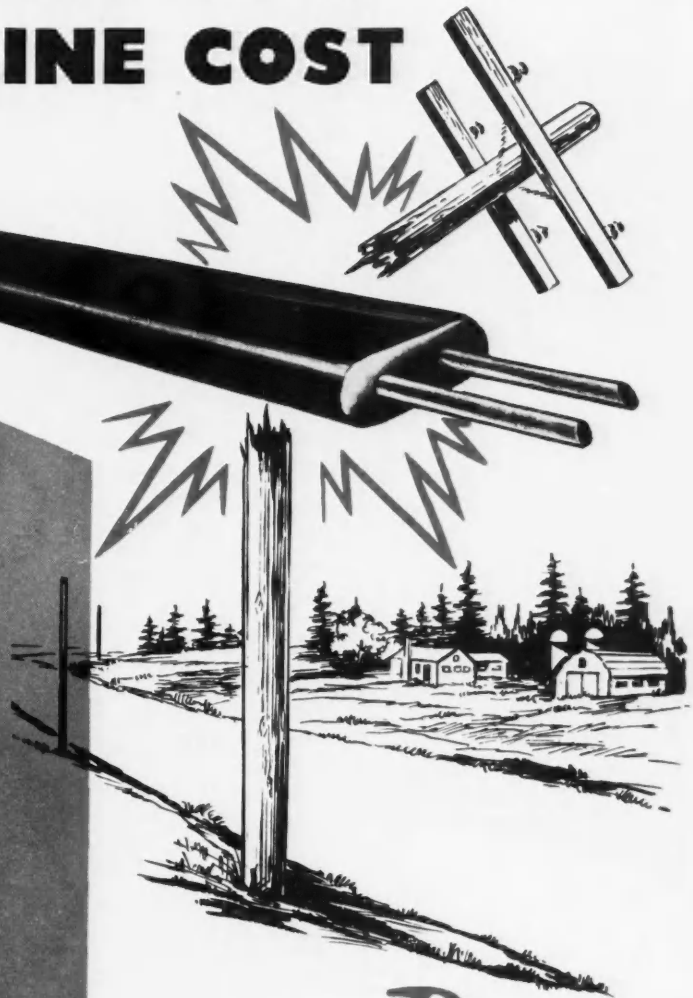
Gladwin makes many products for the telephone industry. Its products have been advertised in our columns. Formal announcement will be made in our January 15 edition.

Goldye Lustbader

WE WILL MISS the cheery greeting of *Mrs. Goldye Lustbader* when we telephone the Kellogg Switchboard & Supply Company. Goldye retired on October 31 following 43½ years of service to her company.

During her years of service to the company she served as private secretary to five presidents of that company; first was the late *W. L. Jacoby*. She is well known by Independent telephone people all over the United States. Goldye was a warm friend of ours through all the years of our association with the telephone industry and we will miss her in our daily work. She resides with her husband at 3301 *W. Schubert, Chicago* 47, *Ill.*

REX ONE PAIR CUTS POLE LINE COST



A Span lengths up to 600 feet are possible with Rex One Pair Distribution Wire. Extra service poles are eliminated on long extensions and long drop runs.

B Economically installed — no cross arms, pegs, or glass insulators. Wire is simply installed on tangent supports and J hooks.

C No tree leakage — a heavy extrusion of high molecular weight, high dielectric strength polyethylene, enclosing both conductors prevents accidental grounding and eliminates excessive right of way clearance.

D Excellent transmission characteristics — similar electrical properties to R.E.A. listed Rural Distribution Wire assure good subscriber service.

E Easily transposed — no special brackets; simply twist span at installation. Cross talk and induction noise are kept to a minimum.

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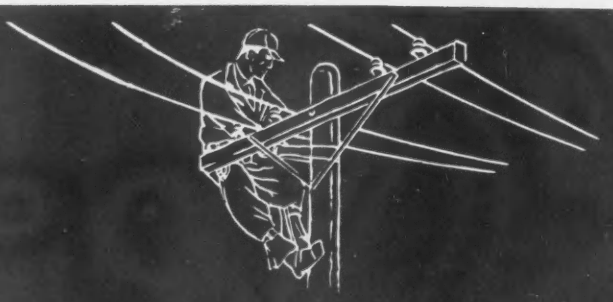
INDUSTRY NEWSLETTER



Tax Laws & Interpretations

ANOTHER good example of how the nation's tax laws and interpretations affect wide areas came up in testimony before another Ways & Means subcommittee, headed by Rep. Wilbur Mills (D., Ark.). The Mills group was holding sessions to look into unintended tax benefits and hardships which have cropped up under tax legislation of recent years.

Two spokesmen on behalf of the Bell System pension fund asked delay and legislative reversal of an Internal Revenue Service ruling which could cost the fund $500,000 and hamper its investment activities in the future. American Telephone & Telegraph Co. Treasurer John J. Scanlon and Wallis B. Dunckel, Vice President of Bankers Trust Co., trustee for the fund, said the ruling would impose a hardship on the fund and its beneficiaries without benefitting anyone.

The ruling is the result of a provision in the 1954 tax revision law prohibiting tax-exempt pension trusts from acquiring the debentures of the grantors of the trusts, listing them as "prohibited" transactions and "loans" to the granting corporations. IRS has interpreted the law as requiring pension trusts to dispose by next Feb. 1 of debentures of granting corporations acquired since March 1, 1954, and as barring them from acquiring the debentures in the future, under penalty of loss of the tax-exempt status. The ruling does not apply to mortgage bonds, or to equity securities where trustees are permitted to buy them — the Bell System trustee is limited to debt obligations legal for insurance companies under New York law.

Mr. Scanlon and Mr. Dunckel, brought out that Bankers Trust has purchased for the Bell System fund about $3,500,000 of AT&T and Bell System operating companies' debentures since the 1954 cutoff date. Because of the depressed condition of the bond market, disposal of the debentures on the open market now would mean a loss of nearly $500,000. In addition, the ruling would bar to the fund a substantial part of its investment opportunities. Debt obligations of the Bell System in recent years have amounted to about one-sixth of the high-grade debt obligations available for investment by the trustee, it was noted.

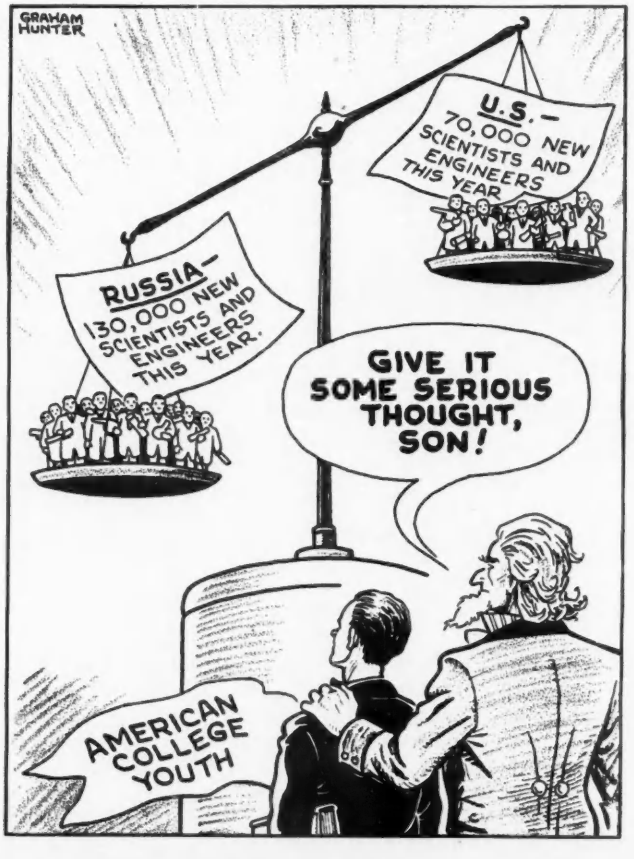
Rep. Mills has called on IRS to delay the divestment deadline to July 1, to give time for Congressional action on the matter. He pointed out, however, the difficulty of writing a legislative revision which would meet the problems of trustees of funds like the Bell System's, and at the same time protect the funds and prohibit them from being used as tax dodges by other corporations.

"Hush-A-Phone" Decision

INDICATIONS are that the Federal Communications Commission, which had its decision barring the use of the Hush-A-Phone remanded to it by the United States Circuit Court of Appeals, will not seek further court review of the matter. The 15-day period during which the Commission could have asked the Circuit Court for a stay of mandate expired with no filing by the Commission. Although it is still possible for the

Continued on page 10

BALANCE OF POWER!


GRAHAM HUNTER
U.S.— 70,000 NEW SCIENTISTS AND ENGINEERS THIS YEAR
RUSSIA— 130,000 NEW SCIENTISTS AND ENGINEERS THIS YEAR.
GIVE IT SOME SERIOUS THOUGHT, SON!
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● Equipped with a Tel-E-Lect FLD (Fold Over Derrick Storage Kit) this truck can be readied automatically for work or for over-the-road travel in a few minutes.

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● **Mounts on any Truck:** "A" or "T" frame *Self-Storing* derricks for either front or rear operation are available for most popular trucks. Your own mechanic can convert your truck into an efficient, profitable utility rig in a few hours.

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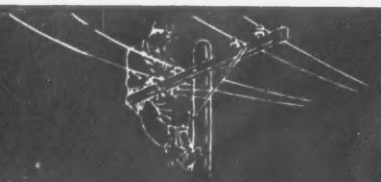
INDUSTRY NEWSLETTER



(Continued from page 8)

Commission to request the US Supreme Court for a writ of certiorari (review) within 90 days of the Nov. 8 ruling by the Circuit Court, there has been no indication that this action will be taken.

The result is that the FCC now will have to obtain tariff changes carrying out the court's ruling, which directed "further proceedings not inconsistent with this opinion." The opinion was that the telephone companies' foreign attachment tariff provisions, as they are construed to bar the Hush-A-Phone, "under the Commission's decision, are in unwarranted interference with the telephone subscriber's right to use his telephone in ways which are privately beneficial without being publicly detrimental."

Preliminary conferences between telephone industry representatives and FCC staff members have been held about the court ruling, but no decision had been reached either regarding the form of the new tariff or the procedural steps to be followed in carrying out the court's ruling. It is clear, of course, that use of the Hush-A-Phone — a cuplike device intended to provide privacy and silence room noise — must be permitted under the court's directive, if it is not overturned. What causes the most perplexing problem is the possible effect of the tribunal's "privately beneficial without being publicly detrimental" language, in dealing with the foreign attachment tariff rule, on other equipment items available from firms other than telephone companies.

New Owners

MARION RURAL TEL. CO., Philadelphia, Mo., has completed purchase of exchanges at Warren, Eden, Philadelphia and Berbow in Marion County, Mo. The co-op also disclosed it has received authority from the Missouri Public Service Commission to serve Sigsbee in Shelby County and an area in northern Marion County now without service. The co-op, recently received a check for $8,000 as the first installment of a $292,000 loan from the REA.

New D D D Book

AN UP-TO-DATE look at one of telephone industry's fastest growing developments is provided in new book, "*Notes on Distance Dialing*," issued by American Tel & Tel. Co. Book is a revised edition of "*Notes on Nationwide Dialing* — 1955," which proved to be of value to entire industry as guide to technical requirements for distance dialing.

New edition was prepared by AT&T's operation and engineering department in collaboration with Bell Telephone Laboratories and with comments and suggestions of USITA and REA telephone engineering staff. Volume amplifies 1955 Notes with latest information, brings up-to-date the maps showing important switching locations, and includes a number of important changes in plans and procedures. Independent telephone companies may obtain copies from their nearby Bell System company.

Expansion & Improvements

GRAND River Mutual Tel. Corp., announced that the new dial telephone system at Bethany, Mo., began operating Dec. 2, 1956. The Eagleville, Mo., cutover was completed by Grand River Mutual Dec. 16 . . . . In Feb. or Mar. Goodman (Mo.) Tel. Co., plans to switch over to dial equipment. R. W. Eppard, pres., said work has started on the new office building. Goodman Tel. Has a $224,000 REA loan allocation . . . Concord (N. C.) Tel Co., which began operations in Nov. 1897 by serving 80 patrons living in the heart of Concord, has installed its 30,000th telephone. Dr. W. C. Houston of Concord has been president of Concord Telephone since its organization. L. D. Coltrane Jr., of Concord is the company's general manager; secretary-treasurer. Charles A. Cannon and T. M. Schramm are vice-presidents.

Meadow River Tel. Co., Rupert, W. Va., awarded $51,762 contract for the new dial central office equipment. J. Rodney Graham, Meadow River Tel. pres., stated that this is only one phase of the plan to bring Rupert and vicinity a dial system costing approximately $450,000 . . . . Telephones in Kaplan, La. went dial last month. L. C. Turnley, Kaplan Tel. pres., said the new dial equipment cost $113,199.45. The company has spent $123,000 on outside plant additions since January . . . . The Wisconsin Public Service Commission authorized a $159,832 plant expansion program for Turtle Lake (Wis.) Tel. Co. Company will finance conversion to dial equipment and plant additions with an REA loan. Turtle Lake Tel. serves 328 subscribers.

People In The News

MAX LEACH has been appointed division manager of the General Telephone Co. of Illinois' Northern Division headuartered at Belvidere . . . Paul Wank, St. Johns, Mich., district manager for Union Tel. Co., has been named division plant superintendent in the newly-created Central Division of the Company which will have its headquarters at Owosso. He will be succeeded as manager of the St. Johns' district by William Graef, presently manager of the Grand Ledge district.

New Rates

THE Wisconsin Public Service Commission approved application of the Elk Creek (Wis.) Tel. Co., for authority to increase rates to collect $1,206 from its 134 subscribers . . . . Northwestern Bell Tel. Co., Omaha, filed an application with the Minnesota Railroad and Warehouse Commission requesting an "upward adjustment" in telephone rates in Minnesota.

Growing up–*together*

In 1897, independent telephone companies, sprouting up at an amazing rate, banded together to form their first association. That same eventful year, Kellogg Switchboard and Supply Company was also born.

For 58 years now, Kellogg and Independent Telephony have been growing up together — companions dedicated to meeting the nation's demand for more and better telephone communication. Their close relationship did much to overcome the tremendous odds that faced the young Independent during the pioneering days of the telephone industry. This same cooperative spirit is helping to improve and advance the Independent Telephone Industry as a major force in American business life today.

Kellogg's contributions have been the methods and devices for improving the Independent's service to its customers. Many have become Telephony's most important achievements—"four-frequency" harmonic systems, cradle type telephone instruments, straightforward trunking, and most recently, Kellogg was first to develop and produce Crossbar for Independents. It is this kind of scientific development that will help Kellogg and Independent Telephony grow together in the future as they have in the past.

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NORTH ELECTRIC COMPANY

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WASHINGTON NEWSLETTER

USITA Petitions FCC

THE U. S. Independent Telephone Association (USITA) last month petitioned the FCC to reinstate its now-stayed order of September 19, 1956, looking toward providing eligibility in the power radio service to communications common carriers for maintenance and construction requirements on three two-freuency pairs in the 450 megacycle band. The USITA petition followed a request the previous week from the Rural Electrification Administration that the Commissioner consider again setting up a "separate subpart of the industrial radio service" to permit "telephone companies to establish land mobile radio facilities in the 30-50, 152-162, and 450-460 mc bands" for their own operations.

USITA contended in its filing that petitions submitted to the FCC in opposition to the rule change, which led to the stay, had contained "certain misleading statements" and that "USITA wishes to declare its unqualified support of the FCC proposal making the three pairs of shared industrial frequencies available to the common carriers."

USITA denied that the Commission violated the notice provisions of the Administrative Procedure Act in adopting final rules at variance with what had been originally proposed, as had been charged by those opposing the change, and declared that "there can be no doubt" that the Commission's intentions "were clearly stated" in advance of the change.

FCC domestic public radio rules which provide that a telephone company may use a portion of a common carrier mobile radio system, with which it provides public service, for its own communications needs do not meet the requirements of the Independent telephone companies, USITA said, in view of a "tremendous expense differential" between that type of radio equipment and the type "such as are employed by power and other utilities."

Discussing the position of the National Committee for Utilities Radio that the inclusion of telephone companies in the power radio service would overburden the frequencies involved, USITA said a study of the "official Commission records . . . revealed that throughout the entire United States" power radio licenses have authorized a total of 13 base stations and 167 mobile stations" on the six frequencies. Of the 167 mobile-unit total, the association said, 100 are in Philadelphia, 20 in each of three "separated California communities," and seven are in one Massachusetts community.

Further, the filing went on, "there are only 792 stations (both base and mobile) licensed to all other eligible to use these six frequencies on a shared basis. Of this total, 200 . . . are concentrated in . . . New York City, Chicago, and central California. The approximately 600 remaining station authorizations are scattered throughout the country, with not more than 35 units in any one area."

Equity Requirement For Co-ops

THE NATIONAL Telephone Cooperative Association has said it will "report" to Congress in January the equity requirements of the Rural Electrification Administration for telephone companies and cooperatives, and "insist that we (the co-ops) be given the same liberalized treatment," NTCA officials have stated in discussing an REA staff memorandum on equity requirements for commercial companies.

A memorandum by Everett C. Weitzell, Chief of the REA Telephone Operations & Loans Division, permitting waiver of the rule requiring total deposit of equity funds by commercial companies in exceptional cases was reported in the NTCA publication, *Phone Call.*

The memorandum was quoted as stating that "In certain exceptional cases, the deposit of total equity funds required prior to the first advance of loan funds may be waived if it is determined that the borrower has exhausted all reasonable means of obtaining the required equity, and it is in the best interests of the program to permit the borrower to proceed with construction."

It went on to stipulate, "In waiving this important requisite . . . REA should obtain some additional security for the government loan. In such cases, supplementary mortgage provisions can be offered in exchange for REA's permitting loan funds to be advanced despite the fact that all required equity funds have not been obtained."

The supplementary requirements might specify that no dividends be paid or salaries and other compensation increased, or capital stock be purchased or redeemed, until equity requirements were completed.

REA spokesmen had no comment, other than to confirm accuracy of the quotations from the memorandum. NTCA President Riggs Shepperd and Coordinator Richard A. Dell issued a joint statement saying that they do not oppose the action for commercial borrowers, but believe that co-ops should receive similar treatment.

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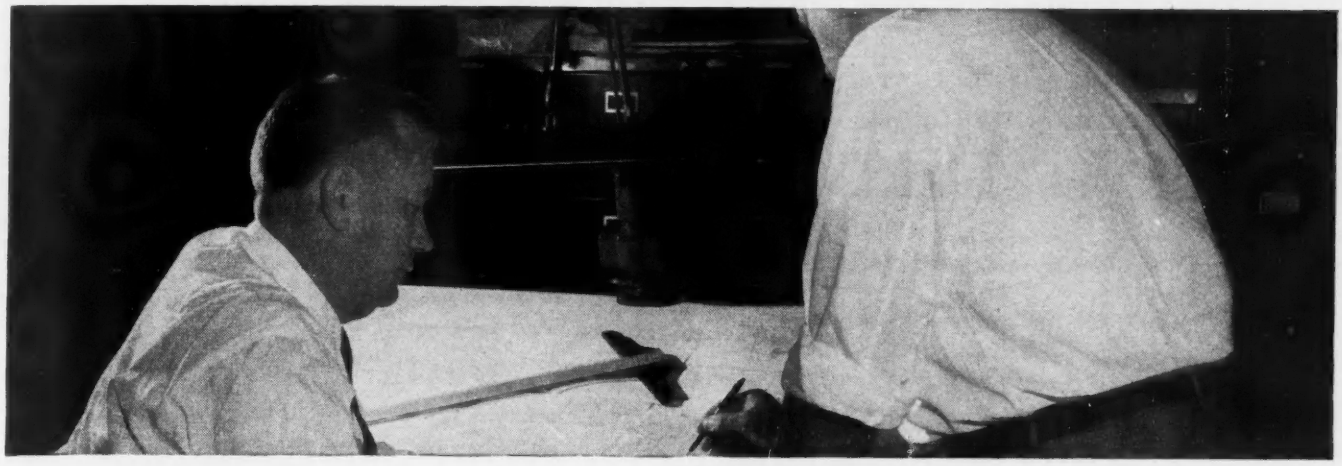

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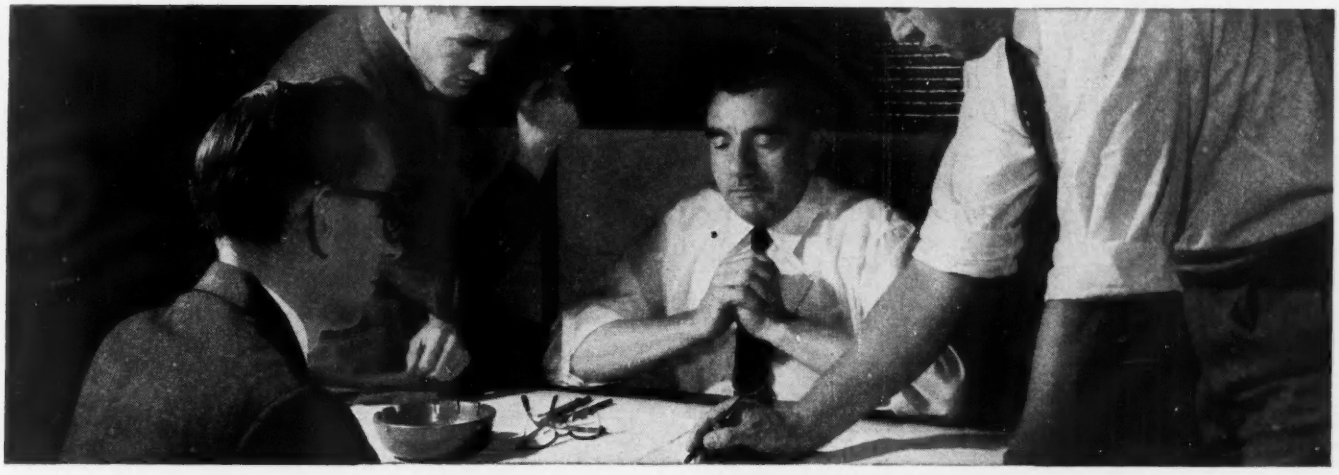

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(Concluded from page 14)

They said "We feel that the present $50 equity requirement for each connected subscriber is exorbitant, and we will continue to advocate a nominal membership fee similar to the type required in the rural electrification program . . .

"The $10 membership fee worked with amazing success in the rural electrification program, and we feel that it would have the same effect on the rural telephone program. We advocate replacing present equity requirements with a $10 membership fee."

REA Administrator David A. Hamil, in a press conference following the most recent meeting of the telephone advisory committee, said that the question of equity requirements would have received more attention if time had been available, and that the subject is one which will have to be considered thoroughly. He noted that the requirements for co-ops are $50 each for new subscribers and $25 each for existing subscribers, while a commercial company must have 10-15% of its assets, after inclusion of the REA loan, in equity capital.

Low Power Communication Device Plan

CONCERN over several features of the FCC's latest proposal for the amendment of the agency's rules governing restricted radiation devices, concerning low power communication devices, has been filed with the Commission by the American Telephone & Telegraph Co., which requested a few changes in the proposal before finalization.

The rulemaking is intended to limit radiations from devices such as wireless microphones, phonograph oscillators, radio-controlled garage door openers, and various types of radio-controlled toys, to protect radio communications operations. AT&T said it is "not clear" whether this would include "inductive type radio systems," but if so, proposed limits on lengths of transmission lines "are too restrictive for all practical applications."

Also, the telephone company pointed out, certain low power radio transmitting equipments currently available or under development, including "lecture aids" and a "proposed wireless subset" which are intended for use within buildings, may radiate in excess of the proposed FCC field strengths, but due to shielding provided by the rooms or buildings in which they are used, no interference would result.

The National Broadcasting Co. filed comments asking that the Commission's proposal with respect to wireless microphones be adopted and, in addition, that the agency modify its rules to permit regular operation of wireless microphones on all channels allocated to remote pickup broadcasting. At the same time, the American Broadcasting Co. said the wireless microphones should be authorized on a regular basis on the remote pickup frequencies rather than in the part 15 rules.

Separations Revisions

THE 1947 SEPARATIONS MANUAL prepared by FCC and NARUC is to be rewritten to include amendments to the manual presently in force and to recognize the changing techniques that have entered the telephone operating field. The task force responsible for rewriting the manual will have representatives from FCC, NARUC, USITA, Bell System, and other interested parties. Mervin H. Alexander, Toll Engineer of USITA, has been designated to represent the Independents. He will receive assistance from various individuals and operating companies conversant with the problems.

Spectrum Usage

WITH THE demands for frequency space for forward scatter, aviation, commercial, and industrial radio communications steadily on the rise, FCC staff planners have been charged with laying the groundwork for Commission consideration of the possibility of launching a thorough study, perhaps via a full-scale hearing route, of existing uses of all non-government frequency space between 25 and 890 megacycles to complement currently scheduled FCC hearings already slated for frequencies above 890 mc.

Confirming the fact that staff work is under way on the project, a high-level FCC source last month told "*Telecommunications*" that the proposed study, if directed by the FCC, would be more in the nature of a fact-finding proceeding rather than an immediate attempt to dislodge any present 25-890 mc spectrum users, but that all radio activities, including television and radio broadcasting, would be called on to justify their frequency allocations.

Specific requirements cited, in addition to the potential needs for the forward scatter point-to-point communications, were those of a jet-age aviation industry, and the nation's manufacturing, trucking, and communications common carrier services. The projected FCC study would also establish, on a firmer basis than is available at present, well-founded future estimates of possible development of the forward scatter technique, it is understood. While it has been determined that forward scatter communications probably would be best suited to the 25-60 megacycle frequency range, unclassified information available to date has not definitely shown that it would be in the public interest to displace present non-government users of those frequencies, it was pointed out.

The proposed proceeding would not only give the Commissioner a broader store of information about the many fast-moving facets of the present-day radio communications industry, it was explained, but would also make available to the Congress a sound, up-to-date record of the myriad problems facing the communications field and the FCC in its functioning with emphasis on the vital areas not explored by Congressional committees in recent economic studies of entertainment and political use of radio.

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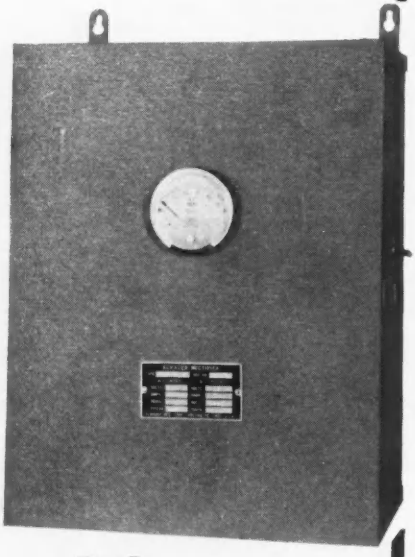

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Merchandising Pays Off

WHAT could be more natural than selling additional listings to college students? People in the Mountain State Tel. Co's. business office at Provo, Utah, recently put that thought to a test and came up with a very gratifying answer.

Each fall, Provo greets some 8,000 students at Brigham Young University. Since most of these students live in apartments or light housekeeping rooms throughout the city, there is a problem of who lives where and how to get in touch with each other. Provo Commercial people, already planning a revitalized sales program, felt the opportunity for additional listings was too good to miss.

Of course, that phase of their over-all sales program was an experiment because additional listings for students had not been promoted in previous years. The University issues its own student directory with names, addresses, and telephone numbers. The possibilities, however, could not be overlooked. Plans were made to include students in the "prospect" list, with special emphasis on additional listings in the "package selling" program for September.

Early in August, key personnel of the Provo Office attended a merchandising "refresher" course to brush up on package selling and review other sales techniques. Further group meetings were held in Provo and new and different sales approaches designed.

By September, the Provo sales team was ready to swing into action. During the month they talked "telephone service in packages" to more than 5,000 prospects — among them many BYU students. Provo's September results prove again there's a great future for package selling — that people want and need modern telephone service "tailor-made" to fit their needs. The sale of 378 residence additional listings during September proved their hunch on student needs was also right. That alone accounted for almost $2300 of the $9200 total annual revenue netted by Provo during the month.

Competition?

MANY telephone subscribers — employes, too — feel that telephone companies operate without competition. While it is true telephone companies provide service in a given assigned area, competition — keen, vigorous competition — is very much in the picture, and last month a special bulletin issued by Mountain States Tel. & Tel. pointed out that the telephone company is in direct competition with every manufacturer of every item and service that people buy.

"We know," said Mt. States, "that the average American family has only so much money to spend after paying for absolute necessities such as taxes, food, heat, and shelter.

"That means if the Jones family buys a television set, a radio, a car, or any of thousands of articles competing for consumers' dollars, they may feel they can't afford the telephone extensions they need so badly. It also means the industry getting the most of those consumer dollars is doing the best job of selling its products."

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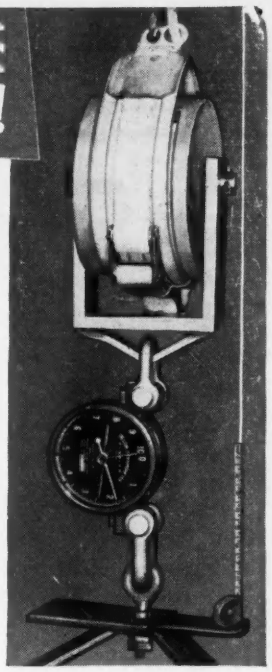

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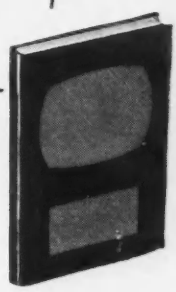

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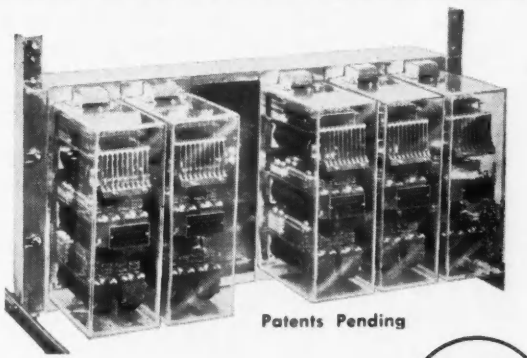

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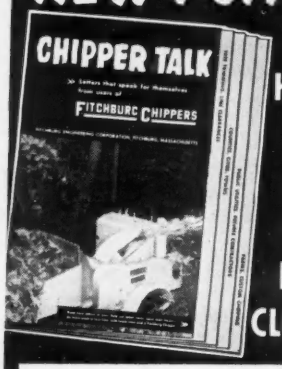

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Winter Driving

DRIVING a motor vehicle during bad weather, particularly when roads are covered with ice, snow, or slush, requires extra caution on the part of the driver and reduced speed of the vehicle.

Bad weather and slippery road conditions are often blamed for many accidents and the tendency has been to absolve drivers of responsibility under such circumstances. A more careful analysis, however, might show a large percentage of these accidents are frequently caused by driver failure and not entirely because of road conditions. In other words, some of the drivers involved did not look for or failed to heed existing "Tip-offs" and did not make suitable allowances for the conditions of the road surface.

As soon as mud, rain, snow, ice, or slush are present on a road surface, its frictional qualities change and the driver who does not make adequate allowances for such change, is heading for trouble.

The driver's mental attitude will go a long way toward helping to make winter driving safer. Applying the *three "C's"* of defensive driving — *concentration* — *control* and *courtesy* — will aid in practicing the highest type of self control when driving conditions are bad.

In addition, the following safe driving aids will assist in keeping out of accident traps:— (1) *Keep alert;* (2) *know what to do in an emergency;* (3) *adjust driving skills to meet traffic, road and weather conditions;* (4) *keep out of tight spots;* (5) *drive cautiously on hills, streets with grades, or high crowned roads;* (6) *use extra caution when approaching intersections and railroad crossings;* (7) *avoid the necessity of sudden stops. Start to slow down soon enough. Let the engine do most of the braking;* (8) *keep out of trolley car tracks;* (9) *avoid driving in icy ruts if possible;* (10) *don't drive with a false sense of security, chains or snow tires will not always prevent skidding;* (11) *make more use of second or low gear in slow moving, congested traffic;* (12) *keep the windshield clear;* (13) *use extra caution and slower speeds when going around curves;* (14) *be on guard for ice on the tricky spots along highways, such as shaded locations — under viaducts — on bridges;* (15) *keep to the right on narrow, slippery, two lane roads.*

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SKIDDING is usually caused by fast driving and quick stopping on slippery roads. When a car starts to skid *do not jam on the brakes or throw out the clutch,* instead, do this:— *Take foot off the accelerator, turn the steering wheel in the same direction in which the rear of the car is skidding, press lightly on the brake pedal, release quickly, and repeat the operations until the car slows down gradually, then release the clutch and apply the brakes normally so that the car can be stopped without going into another skid.—From New Jersey Bell.*

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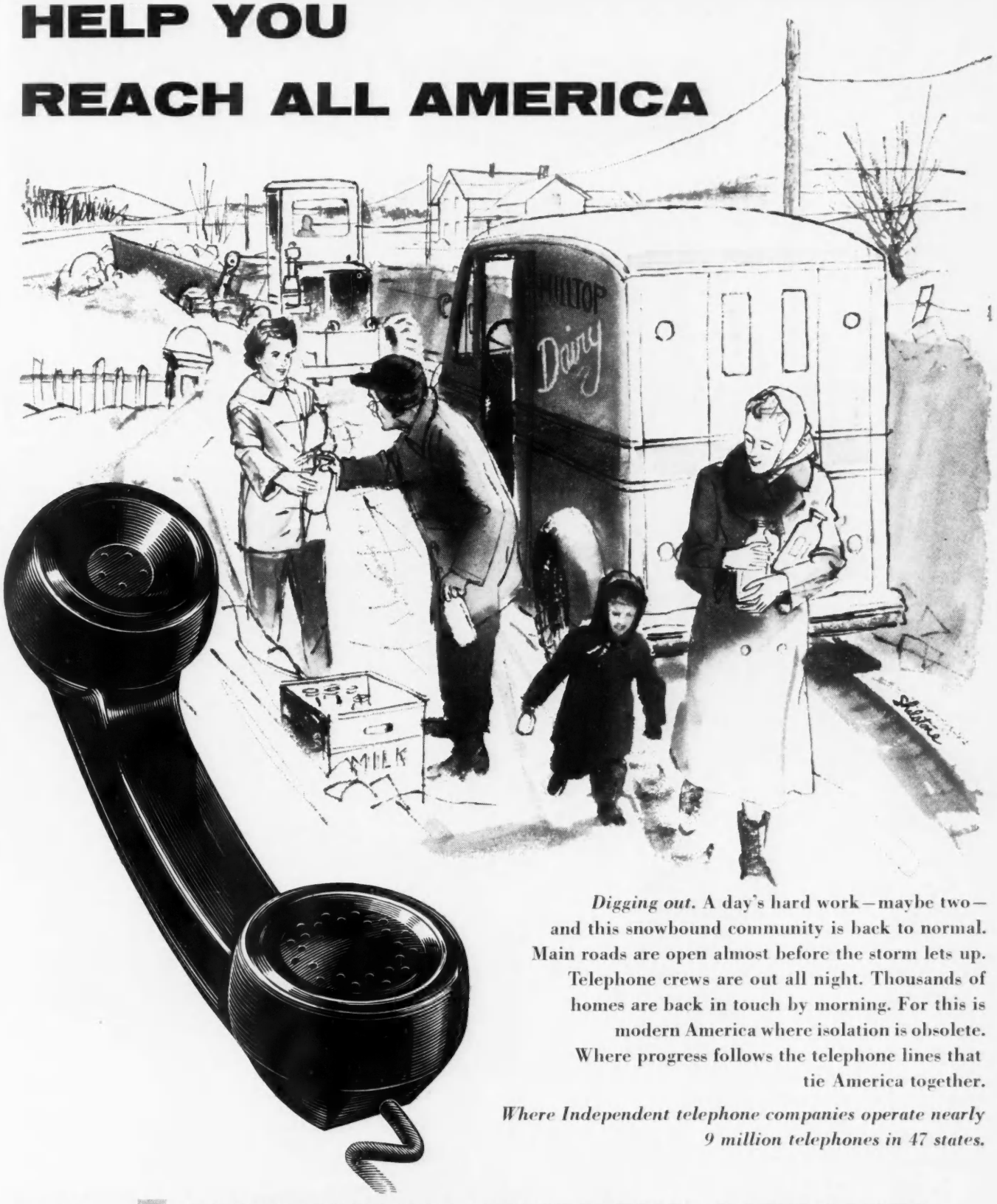

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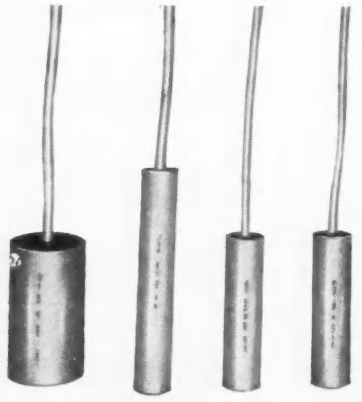

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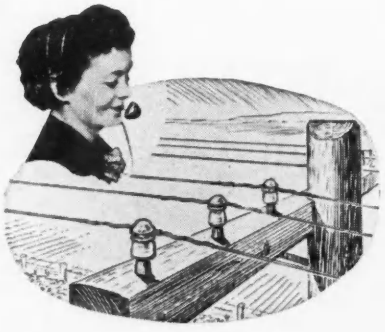

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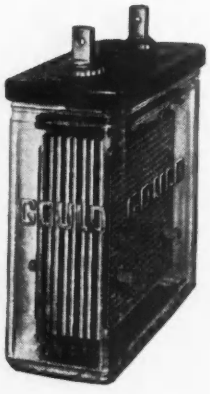

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KENTUCKY Independent Telephone Association, Phoenix Hotel, Lexington, Mar. 5.

TEXAS Telephone Association, Gunter Hotel, San Antonio, Mar. 28-29.

IOWA Independent Telephone Association, Fort Des Moines Hotel, Des Moines, Apr. 2-3.

OHIO Independent Telephone Association, Deshler Hilton Hotel, Columbus, Apr. 16-17.

INDIANA Telephone Association, Claypool Hotel, Indianapolis, May 8-9.

WISCONSIN State Telephone Association, (Hotel Not Selected) May 15-16.

ILLINOIS Telephone Association, Pere Marquette, Peoria, May 22-23.

KANSAS Telephone Association and **MISSOURI** Telephone Association, Town House Hotel, Kansas City, Kans., May 27-28.

PENNSYLVANIA Independent Telephone Association, Buck Hill Falls Inn, Buck Hill Falls, June 4-5.

MAINE Telephone Association, **NEW HAMPSHIRE** Telephone Association, and **VERMONT** Telephone Association, Wentworth-by-the-Sea Hotel, Portsmouth, N. H., June 4-6.

CALIFORNIA Independent Telephone Association, Ambassador Hotel, Los Angeles, June 5-6-7.

WASHINGTON Independent Telephone Association, and **OREGON** Independent Telephone Association, Davenport Hotel, Spokane, Wash., June 13-14-15.

NEW YORK State Telephone Association, Scaroon Manor, Schroon Lake, June 17-19.

ARKANSAS Telephone Association, Arlington Hotel, Hot Springs, Sept. 16-17.

ROCKY MOUNTAIN Telephone Association, Hotel Utah, Salt Lake City, Sept. 19-20.

NORTH CAROLINA Independent Telephone Association, Carolina Hotel, Pinehurst, Oct. 3-4.

UNITED STATES Independent Telephone Association, Conrad Hilton Hotel, Chicago, Oct. 14-16.

EDITORIAL

"The 890-940 Megacycle Band"

AS YOU HAVE read in previous issues, on November 9 the Federal Communications Commission (FCC) initiated a formal study of frequency allocations above 890 mc. At the same time, the Commission issued a notice of its intention to hold a hearing in order to gather information on the usage of the frequency spectrum and the needs of the various services for frequency space. A hearing is usually necessary before the Commission makes major changes in allocations. Thus, such an action by the FCC would be a necessary step preliminary to securing the 890-940 mc band exclusively for multichannel radio systems operated by telephone companies.

There has been some controversy over this band during the past several years. During this time the communications common carriers have successfully resisted attempts made by others to permit initiation of actual operations of industrial, scientific, and medical apparatus in the band.

With an allocation hearing now expected to begin next spring, we believe it is time to review the reasons why the telephone industry needs the 890-940 mc band, and show why the requirements of the industry will weigh heavily with the FCC when it makes its final decision on allocation of the band.

In its "Preliminary Notice of Hearing," the FCC gave three reasons why frequency allocations above 890 mc must be re-examined. These reasons themselves are an excellent summary of the common carriers' case for a preliminary allocation in the 890-940 mc band.

First, the Commission stated that *"It is now obvious that changes and developments in the art of radio, and in its commercial use, have brought about a need to re-examine the service allocations of frequency bands above 890 mc . . . ."*

Certainly the extensive developments in microwave radio techniques since the present allocations were made in 1947, and the manner in which these have been applied to meet the communications needs of common carrier, could not have been foreseen. Operation of multichannel radio systems in the 890-940 mc band is one of the principal commercial uses of radio not adequately provided for by the existing frequency allocations. If past history of FCC actions is any indication, the Commission will recognize the need for this frequency band for continued telephone industry use.

Second, the Commission stated *". . . where some of the services anticipated 12 years ago have developed to a very great degree, some have failed to develop at all . . ."*

Common carrier occupancy of the 890-940 mc band is certainly a prime example of this situation. With only a secondary and shared allocation in the band, telephone companies have made an investment reliably estimated at the beginning of this year as over $20,000,000. In contrast, the ISM industry, with the primary allocation, exhibited no interest whatsoever in the band until very recently. No ISM equipment is yet operated in this band.

As its third reason for re-examining frequency allocations, the Commission stated *". . . in some instances, the shared uses which have been permitted appear to be incompatible."*

This certainly is the case with the 890-940 megacycle band. Common carrier microwave systems, providing vitally needed telephone and telegraph facilities which must meet extremely high standards of quality and reliability, cannot tolerate the type of interference which would result should ISM equipment with unlimited high power radiations be permitted to operate in the same frequency band.

These are the reasons why a hearing on frequency allocations is really a good thing for the telephone industry. Not only will the telephone industry now have its first opportunity to present its 890-940 mc case formally before the Commission in an allocation proceeding, but the industry also will be able to do this with the advance knowledge that its case consists of exactly those reasons which the Commission acknowledges have prompted a reconsideration of existing allocations.

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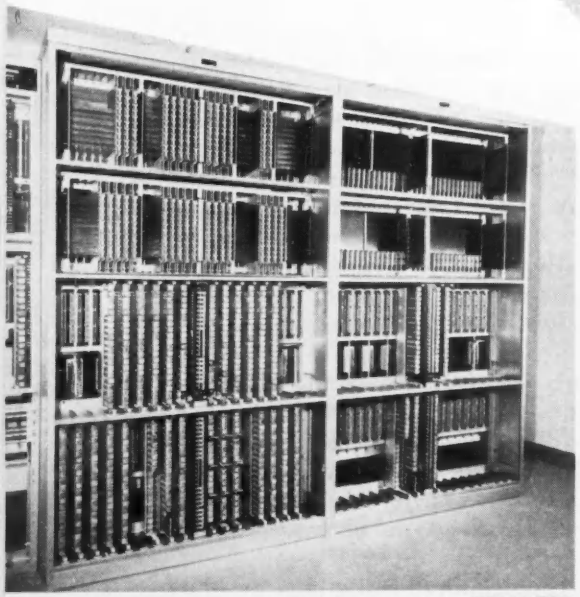
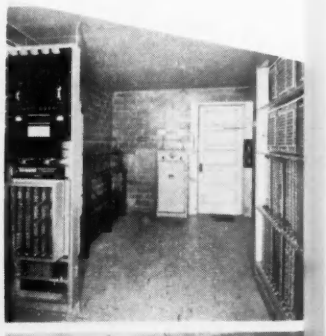
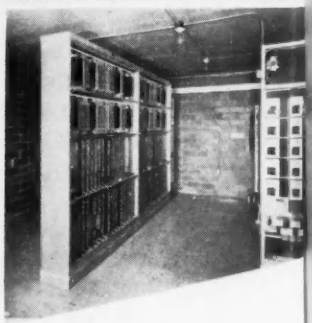
Over 800 Leich Dial Systems

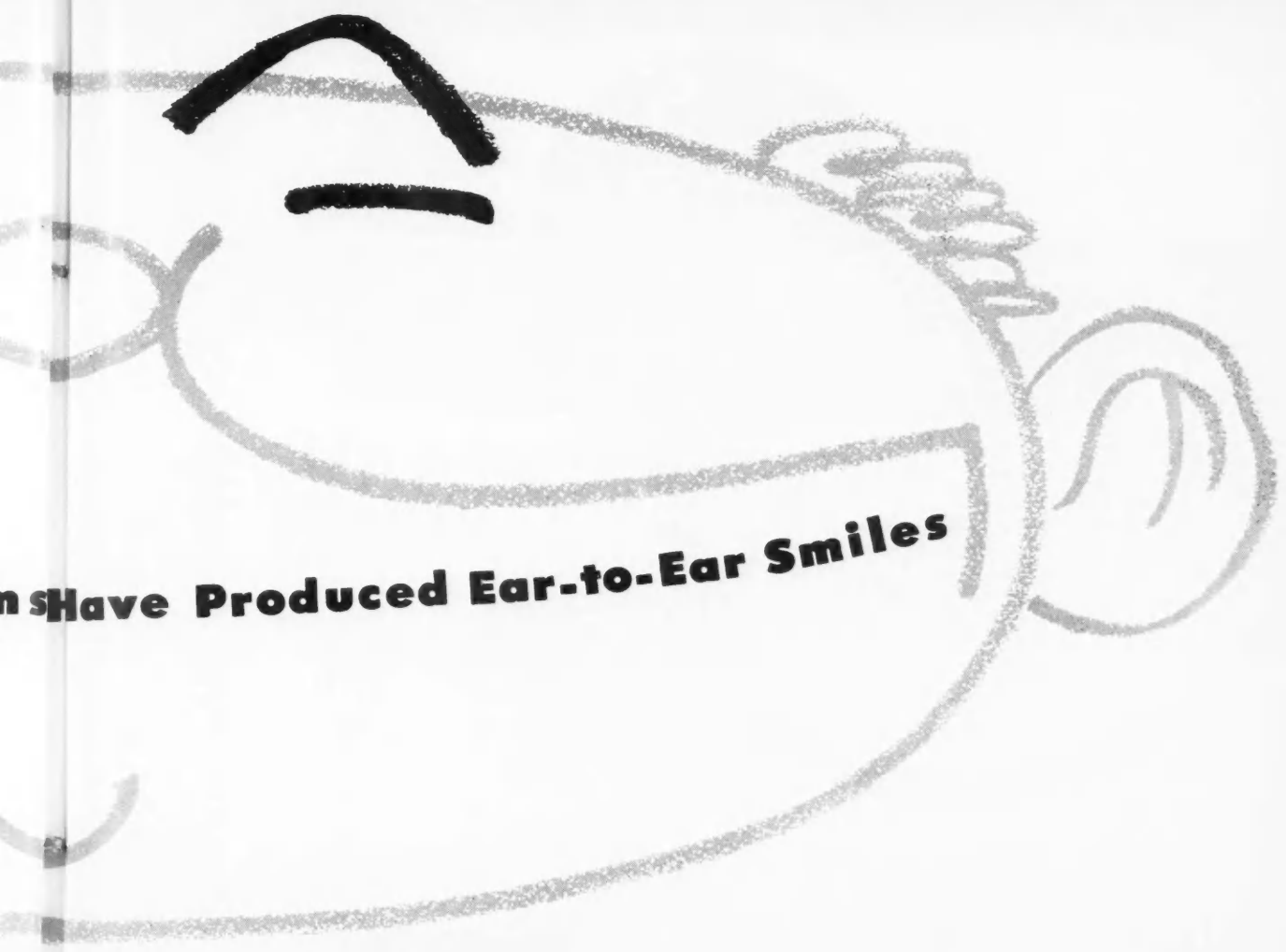






LEICH

LEICH SALES CORPORATION, 427 WEST RANDOLPH STREET, CHICAGO 6, ILLINOIS



n s Have Produced Ear-to-Ear Smiles

We're happy to report that the over 800 Leich Dial Systems now in service have made their owners, and us, of course, smile from ear-to-ear. Here's why:

Leich's Dial System has given the small and medium size exchange a more simplified and flexible system.

It's simple because it's an all-relay dial switchboard. It eliminates elaborate mechanical switching mechanisms which are apt to wear and require maintenance or adjustment.

It's flexible because it offers jack-in equipment. Lines, links, and selectors can all be jacked-in. Your own switchboard man can do it. So expansion is easy and economical.

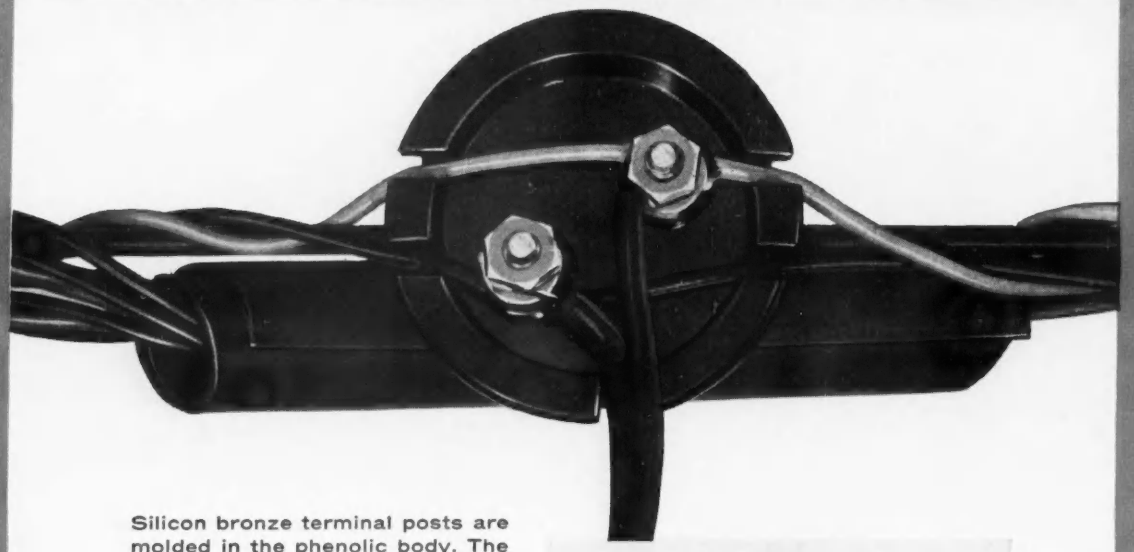
Then, too, the Leich Dial System offers every desirable service and operating feature—enables you to give the finest, fastest dial telephone service.

These practical features have resulted in happy customers. They've recommended Leich's Dial System to other telephone men, and we've kept busy producing more and more dial systems. Naturally, this has made us smile from ear-to-ear, too.

All we ask is that you: Talk with the owner of a Leich Dial System. Write us for a catalogue. Ask us for a quotation. There's no obligation. Thanks.

manufacturers of telephones, switchboards and related apparatus since 1907

PACIFIC COAST: 11401 WEST PICO BLVD., LOS ANGELES 64, CALIFORNIA SOUTHWEST: 1227 SLOCUM STREET, DALLAS 7, TEXAS

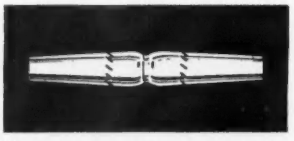


Silicon bronze terminal posts are molded in the phenolic body. The clamp to the support wire is stainless steel and the flexible snap-on cover is long-life Neoprene.

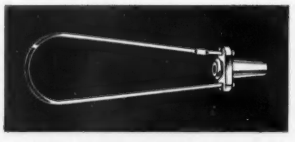
SIMPLICITY–TIMES THREE

1. *Connect drop wire to RD conductors without cutting conductors.* **2.** *Splice the .109 steel support wire.* **3.** *Deadend, or terminate, the steel support wire.*

The Number 5500 single pair terminal takes care of ONE. The automatic type Wirelink takes care of TWO and its companion, Wirevise, handles number THREE. All three jobs are easy, fast and permanent since Reliable has contributed engineering experience to three of the principal problems presented by type RD Telephone Wire.



Wirelink—the automatic type tension splice with 20 years experience built-in, splices securely in a matter of seconds.



Wirevise—a fast and sure automatic type deadend. The support wire is fed through to desired sag and is held permanently.

Reliable

RELIABLE ELECTRIC COMPANY CHICAGO

profits and service through better management

By JAMES L. MORRISON

What are the functions of management? Why are these functions inter-related? How can management be improved through the application of sound techniques? In this first installment of an 8-part article, author Jim Morrison starts providing the answers to such questions by discussing a few of the fundamentals of good management.

CURRENTLY to be seen in various business establishments around the country is this sign:

THIS IS A NON-PROFIT ORGANIZATION
It wasn't planned that way, but that's how it has worked out.

Although such signs are intended to provoke a few smiles, they really aren't so humorous when you reflect upon the fact that several thousand businesses fail each year and many others do not earn a fair return on the owner's investment.

In our capitalistic society the great majority of business enterprises are organized for profit. The inventor who builds a better mouse trap is, in most instances, motivated by a desire for profit. He will either sell his invention, lease it, or organize a company to produce it in the hope of financial gain. We have seen, in our country's relatively short period of existence, how this inventive genius in search of a profit has teamed up with such innovations as mass production and installment financing to raise our standard of living higher and higher.

Except in regulated enterprises such as the telephone business, the right to earn a profit is still largely unlimited. If an invention can be produced and sold at a profit the potential is limited only by the number of units that can be sold. In the telephone business regulation is said to take the place of a competitive market with the result that profits are limited.

The right to earn a profit, limited or unlimited, carries with it the risk of incurring a loss. The right to earn is one thing. The ability to earn is something else. Before a profit can be brought down to the balance sheet there must be sound planning, economical operation, productive employes, and satisfied customers. Without these ingredients a business is destined to fail even though actual bankruptcy is not an immediate spector.

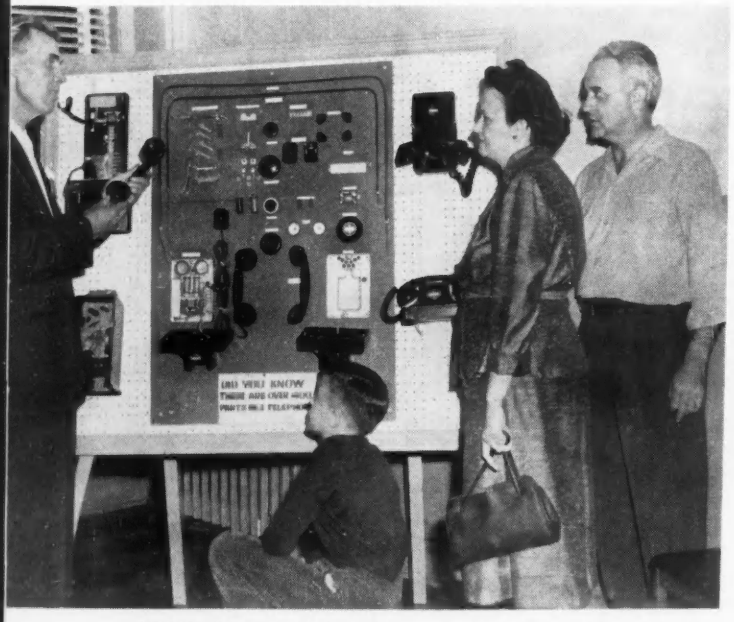
Although there are many contributing factors, the difference between a profit and a loss can usually be summed up in two words — *good management!*

Without good management the best business will soon deteriorate. On the other hand, a poor business can be improved considerably if given the right kind of management.

American business is extremely management conscious these days. And for good reason. The lush period of order taking has passed and we are now engaged in an intense competition for the consumer's dollar.

Telephone companies interested in profits today must give increasing attention to supplying not only an improved service, but also a service that is increasingly useful and valuable to the consumer. It will take good management to do this.

Investors, bankers, and all money lending organizations are definitely interested in the quality of a company's management. Telephone companies seeking funds for dial conversions will find an empty sack unless lenders are confident their funds will be soundly managed. Most bankers will agree that quality of management is the biggest single consideration before funds are advanced. And, good management for the present isn't enough. There must be definite assurance that it will continue into the future. In small communities investors



BEFORE A PROFIT shows up there must be—sound planning — economical operation — productive employes — and satisfied customers.

often will agree to purchase stock on the basis of their confidence in company management rather than upon impersonal balance sheets which are seldom fully understood.

Employes are also showing greater interest in management. If they are not part of management they will seek the opportunity to advance to management posts. Today, the average worker realizes that his job security and opportunity for advancement depends upon the company's success. He can expect to prosper only if the company prospers. He knows that good management will help him do his job better and faster. He knows that good management will work to provide him with fair treatment and fair wages.

The general public also has a big stake in the quality of a company's management. Successful communities are made up of successful people. High quality telephone service depends upon an efficiently managed telephone company. Such a business provides stable payrolls and other assets for the community.

Thus it can be seen that the success or failure of any business affects many people. This is particularly true in the public utility field and explains why the telephone

GOOD MANAGEMENT

. . It doesn't happen by accident.
. . It has to be planned for and provided.
. . It must be developed and encouraged.

ONCE OBTAINED

. . There is no assurance it will continue.
. . It must be compared and measured so deficiencies can be discovered and corrected.

IT IS AS ESSENTIAL

. . For a small business as for a large one.

industry is placing greater emphasis upon management development and improvement.

Good management doesn't happen by accident. It has to be planned for and provided. It must be developed and encouraged. Once obtained there is no automatic assurance that it will continue. It should be compared and measured so deficiencies can be discovered and corrected. It is as essential for a small business as for a large one. Perhaps more so, because the small business doesn't have the advantage of size, and because the smaller the business the more success or failure will depend upon the abilities of one individual.

It will be the purpose of this and the following installments to discuss the various functions of management, to show why these functions are all important and inter-related, and to suggest how management can be improved through the application of sound techniques.

Management will be considered in its broadest sense as including all persons with supervisory responsibilities. The material will be applicable to such supervisory personnel as managers, chief operators, plant foremen, and individual owners of unincorporated telephone companies.

First, however, let us consider a few things which are considered fundamental to good management: —

(1) Establish Objectives

FEW individuals achieve success without first setting a goal. The same truth applies with equal force to a business. Where is the company going? What is it trying to accomplish? What is its objective?

The success of a company cannot be determined until its objectives are known. We assume that the principal objective of most businesses is to make money and to continue in business. Failure to reach these will leave no opportunity to reach other goals. Often desirable objectives cause conflict between the various interests involved. Take for example the following:

"To render the best possible telephone service at the lowest possible cost consistent with fair treatment to the employes and owner's of the business."

This is a laudable goal for any company but it will take good management to balance fairly the interests of the public, the employes and the owners.

Frequently the stockholders will have established ob-

jectives through such instruments as the Articles of Incorporation. If, however, no objectives are known to exist, or if they exist in a hazy and uncertain atmosphere, it is suggested that the board of directors consider and adopt suitable objectives for stockholder ratification.

Usually it is desirable to reduce company objectives to writing. This should not be done, however, if there is risk that objectives, once adopted, will become rigid and inflexible. In time even the most worthy purpose may become undesirable under changing economic and social conditions.

At the time objectives are being considered or reviewed it is desirable to consider any policies that are to be followed in reaching the desired objectives. Ordinarily the major policies will be established by the board of directors. Under the objectives exampled above the following major policies might be adopted:

The best possible telephone service shall mean dial telephone service, and

Employes shall constantly strive to be courteous, fair and honest when dealing with customers.

Numerous other policies might also be established by the board unless it is desired to leave this function to the president or manager. In any event policies should be presented to the board before being put into operation.

Although policies will probably be changed more frequently than objectives, it is recommended that they be reduced to writing unless again there is substantial risk that in so doing they will become inflexible.

Once the objectives and at least the major policies have been established it then becomes management's job to operate the business in line with these considerations.

(2) Specialization

SMALL companies should discourage over-specialization. Usually the problem is not a big one because in most small companies the work force is small and must, of necessity, be skilled in more than one job.

Employes should be given the opportunity to develop proficiency in more than one task. This not only gives them the opportunity to increase their knowledge of the business but also provides a safety factor in the event of loss of an employe.

Very frequently the small company is highly dependent upon one individual. Sudden death or disability can work great hardship unless someone has been trained to meet such an emergency.

(3) Objectives of Officials

IN THOSE instances where officials of the company are not the owners there is the possibility that personal objectives will supercede company objectives.

It is common for officials to seek maintenance of position. This does not mean that a manager will not work hard but it can mean that he perhaps won't make his best showing and thereby set a high standard against which he will be judged in the future. Frequently management is content to maintain what is called "dynamic statusquoism". This simply means that management is reasonably well content to perform in the future as it has in the past.

Managers, like everyone else, dislike making mistakes. Such a fear can cause over-caution and lead to stagnation. On the other hand some managers are overzealous in their desire to enlarge their responsibilities.

These and other personal objectives more often than not can be used profitably. Extremes, however, can create serious situations.

(4) Leadership

IT IS fundamental that good management should provide the leadership necessary for the success of the business. In fact the job of managing any enterprise is becoming more and more one of managing people.

A leader must work well with people and be able to obtain their support. The support he seeks should be

INVESTORS, BANKERS and all money lending organizations are interested in the quality of a company's management. Companies seeking funds will find an "empty sack" unless lenders are confident their funds will be soundly managed.

obtained through persuasion and not through authority. He must coordinate the activities of a number of people performing various functions so the parts mesh into a smoothly-functioning organization.

A leader must make decisions and must accept the responsibility for those decisions. It is his job to manage the business and he will be held accountable although employes may have failed to follow his instructions.

(5) Normal Span of Control

THERE is a limit to the number of people any one individual can supervise. The limit varies with the individual, the quality of the subordinates, and the type of work. Too many subordinates can result in insufficient supervision, friction among employes, and too heavy a work load for the supervisor. On the other hand too few subordinates can lead to over supervision.

No manager will be happy with his job if he is overburdened with the supervision of too many employes. While this will seldom be a problem for most small companies it is suggested that if more than 10 workers are employed, consideration should be given to either em-

ploying an assistant manager or delegating supervisory responsibility to a chief operator or a plant foreman.

(6) Delegation of Responsibility

IN ALL organizations, responsibility for certain work must be delegated to others. The supervisor should have a clear understanding of what must be done and should be able to properly explain what will be expected from the employe.

Employes sometimes fail to do their work well because they do not know what is expected of them. All work assignments should be definite and clear. It may be desirable to put assignments in writing so there will be no question as to their nature and extent.

Written assignments may later prove valuable in evaluating both the job and the worker. If written orders are used however, there is risk that the employe will do only those things designated and no more. And, in time, employes may hesitate to take any action without first receiving written instructions.

Responsibility should not be delegated unless there is also a delegation of authority. Insufficient authority is seldom better than none at all. Authority should be based upon knowledge and position. Position can command compliance with an order, but knowledge commands respect.

Authority should be used tactfully and fairly. It should be granted whenever possible if subordinates are to learn to make decisions. Once authority is given it should be backed up. Even if the authority has been used improperly any correction needed should be made in private. Otherwise the supervisor's future authority is undermined.

(7) Rules and Their Exceptions

WHENEVER a group gets together in pursuit of an objective it's members soon find it necessary to adopt rules to govern their activities. Without rules there can be no order. Very frequently rules are broken without the offending employe having been advised of what the rules are. Consequently it is desirable to establish procedures to cover as many typical situations as possible, reduce them to writing, and post them conspicously for all to see. Thus, employes may take appropriate action without constantly consulting the supervisor.

EMPLOYES ARE showing greater interest in management. They realize their prosperity depends upon company prosperity.

(8) Accountability

AN INDIVIDUAL to whom work has been delegated should be held accountable for doing it. Otherwise he may do the work poorly and soon come to disregard instructions. The employe should know what is expected of him and his performance should be defined in

Seven Important Chapters To Come

OF COURSE the TE&M editorial staff hopes Chapter One of the new series of articles on "*Profits and Service Through Better Management,*" by our new author, *Jim Morrison,* will provide you with ideas you can put right to work in your own company.

BUT CHAPTER ONE is only the start. Here are the chapter headings for the balance of the series:—

Chapter II — Developing Company Organization and Policies.

Chapter III — Employe and Management Selection.

Chapter IV — Planning and Budgeting.

Chapter V—Directing Employe Effort.

Chapter VI—Co-ordinating and Standardizing.

Chapter VII — Controlling and Evaluating.

Chapter VIII — Management Development.

WE KNOW *Jim* plans to consider management in its broadest sense as including all persons with supervisory responsibilities. The material will be applicable to company owners, company directors and officers, managers, chief operators, plant foremen and supervisors, and written with one purpose — *to suggest how the management of any company can be improved through the application of sound techniques.*

As we said before "we hope you like the idea."

Your comments will be appreciated. — Also, since the articles will be appearing *exclusively* in TELEPHONE ENGINEER & MANAGEMENT *you may want several of your employes* to read and study each article. If you do, drop us a line, tell us how many additional copies of each issue you will require and we'll advise you how they may be obtained.

measureable terms so that he may be properly rated.

No employe should be held accountable to more than one supervisor. If he is, there are bound to be occasions when he will receive conflicting orders. This leaves the employe in an untenable position.

(9) Flexibility

IT IS ALSO fundamental to good management that every organization be kept as flexible as possible so that operations can be expanded or contracted with a minimum loss of efficiency.

Policies and rules should be reviewed periodically along with methods and procedures. Changes should be made as needed to reflect changing economic and social conditions. The sudden gain or loss of a major plant in the community may come as a surprise but management can anticipate that such things may happen and prepare the foundations for any necessary changes.

(10) Developing Procedures

ORDINARILY management does not have the responsibility for developing objectives and major policies. It does, however, have the responsibility for developing the methods and procedures that will be used in following established policies and objectives.

Procedures are useful in a number of ways. They assist in the training of new personnel and provide a means for rating job performance. Once developed and followed they will help to minimize the need for supervision. When reduced to writing they provide a convenient vehicle for studies aimed at achieving greater economy of operation. A subsequent installment will explore the use and development of procedures in greater detail.

(11) Morale

MORALE plays an important part in the functioning of any telephone company. If employes are enthusiastic and feel they are well treated they will work better and produce more. If they are dissatisfied with their jobs, pay, or working conditions their feelings will be reflected in their work. Well satisfied employes will require less supervision than disgruntled individuals who must be driven.

Although it will take both time and effort good morale can usually be achieved if the company will constantly strive to be fair and reasonable with its employes. A worker who receives an unexpected but earned wage increase will obviously be happier than the worker who had to fight for an increase.

Being fair and reasonable is a full time job. Most of the time will not do. Just a few instances of arbitrary treatment will tear down months of effort.

(12) Discipline

EMPLOYES of every company must subordinate themselves to some extent to the needs and requirements of the organization. Certain rules such as observing regular working hours and no drinking or gambling on the job are necessary. Most employes will conscientiously strive to abide by the established procedures.

In all organizations, however, there will be one or more individuals who will not do their work properly, or will violate the regulations. These individuals must be disciplined or the rules will soon be meaningless to all.

Meet The Author

JAMES L. MORRISON was born in 1925 at Kansas City, Mo. He attended public schools, at Grinnell, Iowa. Entering military service in 1944, he served with 8th U. S. Air Force, England as a bombardier and was shot down while flying in combat and interned as a German prisoner of war.

After receiving his discharge in November, 1945, Mr. Morrison attended Grinnell College, Grinnell, Iowa, and Cornell College, Mt. Vernon, Iowa. He was graduated from Drake University, Des Moines, with Bachelor of Laws degree in 1950 and is admitted to the practice of law in Iowa and Nebraska.

Prior to becoming Secretary and Treasurer of the Nebraska Telephone Association in 1952, Mr. Morrison was a Special Agent of the Federal Bureau of Investigation, at Burlington, Vt., and prior to that service he was associated with the Iowa Telephone & Telegraph Co., Grinnell. At present Mr. Morrison is Director of General Information for the West Coast Telephone Co., Everett, Wash.

Every effort should be made toward disciplining positively by trying to gain acceptance of the rules. Employes should agree that the required procedures are reasonable and understand why they exist. Penalties, when imposed, should be handed down impartially and should be appropriate to the seriousness of the violation.

(13) Management Functions

IN THE foregoing paragraphs we have discussed certain things which are considered fundamental to good management. In subsequent installments we shall consider in greater detail the following functions and characteristics of good management:

(1) Developing Company Organization and Policies.
(2) Employe and Management Selection.
(3) Planning and Budgeting.
(4) Directing Employe Effort and the Development of Procedures.
(5) Co-ordinating and Standardizing.
(6) Controlling and Evaluating.
(7) Management Development.

Your comments on this and the succeeding articles will be appreciated. If you have subjects you would like discussed in future articles drop me a line and we'll try to do our bit to give you the right information. See you in the next issue of TE&M.—*Jim Morrison*

Securing Top Results From Work Assignments

By ERNEST W. FAIR

"GET ROUGH—let 'em know it's their jobs if they fail to come through—that's the only way to handle employes when you give them a job to do!"

"Apply some sound planning and maneuvering in handing out your work assignments and you'll not only keep the staff happy but get the job done every time!"

The foregoing are two solutions to the problem of seeing that a telephone company executive's work assignments are carried out by the men and women under his supervision. They represent opposite extremes, of course. The first was in top favor many years ago; the second has supplanted it almost entirely today.

The gruff and bombastic method required little planning. Sometimes it got the job done and sometimes it did not. It usually caused hard feelings and resentment and was a source of constant grief for the executive in the follow through that was necessary.

Not so with the use of today's methods of securing top results from work assignments. In paragraphs to follow are summarized the important ingredients which go into this formula. The application of all which apply to each particular situation assures the assignment being carried out with less strain on the executive and greatest assurance of desired results.

"A Clear Picture"

PRESENTING a clear picture of all the facts is of first importance. Any assignment which gives the employe only half a picture of what is to be done or how it is to be done leaves a wide margin for error and possible failure. Making certain that we have presented all pertinent data and that it is clearly understood by the employe is positive assurance the margin for error can be reduced to almost a vanishing point.

Such a presentation need not go into fine detail; any employe worth having on our payroll should have the ability to think for himself or herself to at least a small degree. But every assignment should be first checked carefully to make sure that ALL of the facts are contained within the assignment before it is relayed to the person involved.

Make sure that the importance of the assignment is specified. A job handed out in an off-hand manner will not impress the employe as being of considerable importance and therefore deserving extra effort and care. Where such importance is present it should always be made clear to the employe to whom we are giving any assignment.

"Don't lose control yourself — keep the area limited," is advice given by many experienced executives. They point out that retention of some element of control on each assignment is the executive's guarantee that the employe will put forth maximum effort in its accomplishment. As long as an employe has definite responsibility toward someone else in performing any task, he or she will always exercise greater care and caution in carrying out the assignment.

This also brings up our next point —check up and reassure from time to time. Most such work assignments involve projects of more than a few hours. In many instances they will involve several days. On the latter it is most important that the executive have a regular routine of checking with the employe on what has been accomplished. On every such occasion he should pass along reassurance to that employe on how he or she is handling the assignment. A check-up for the latter purpose alone will fulfill the design. It is an added insurance that the orders will be carried out accurately and as speedily as possible.

Another factor of importance is to always tell the employe with whom he is to deal in carrying out the assignment AND to inform such individuals of the role expected of them when they are approached. Such procedure makes any assignment much easier for the employe to handle. The authority of the executive can smooth the way by such assurances. It can cut the completion time of most assignments by as much as half as compared with the time required should such contacts not be given with each requirement assigning them.

"Don't pass along the hot potatoes to take yourself off a spot," is another piece of advice handed to us by several experienced executives. They point out that this is always the line of least resistance for the individual confronted with such an unappealing or difficult problem, i. e., pass it along to someone else.

Such procedure never endears an executive to the men and women working under him. They recognize those jobs which the executive should handle himself. When any individual has such a "hot potato" suddenly thrust upon him that man is anything but happy. Under those circumstances he will not only find it difficult to carry out the assignment but will in most instances do no more than is required for him to get by.

Technical Assignments

ALONG much the same line it is also inadvisable to pass along assignments which are actually too technical for members of one's staff to handle. We all have a tendency to assume that the technical knowledge we possess should also be a part of the equipment of our staff men and women. This is seldom the case. Otherwise one of them might very well be sitting in the executive chair instead of you or I.

Every such work assignment should be carefully examined for such technical elements and a thorough consid-

eration made of the ability of the person to whom the assignment is to be given. A number of studies have shown that the most prevelant reason for failure to carry out executive assignments by staff personnel is based on the inability of the individual to handle the problem.

Such procedure, when repeated frequently, lowers the morale of an otherwise good member of our staff. A very inefficient man or woman can be reduced to virtual incompetence by a continued barrage of such assignments. Careful checking of the technical requirements and the ability of the person to carry out the assignment should be a must on every major order issued by an executive on even the minor assignments.

"Don't delegate a job you can handle more efficiently yourself," is another good piece of advice from several executives. They point out that the primary responsibility of any executive is to "get the job done" in the speediest, quickest and most economical manner. When an assignment comes up that can be so handled by the telephone company executive himself much more ably than any other member of his staff that executive is violating this principle by delegating it to someone else.

They also add that such assignments usually result in waste all around—first in the executive's own time re-doing the assignment itself or in completing that part of it the other fellow was unable to accomplish, and secondly, in the time of the employe to whom the assignment was given in the first place. The latter could have more profitably spent his time on some task he was thoroughly fitted to handle.

Along these lines we have another suggestion — "Don't expect the job to be done as well as you could do it" — something we often forget. The wise executive always remembers that he holds down the business post in his possession because he has reached top efficiency.

As a final suggestion we pass along a pointer mentioned by almost every expert with whom we talked—"Don't have too many going at once"—which is one of the big failings of many executives. Too many job assignments means our supervision and control over them is spread so thin we can actually lose all touch with a number of these assignments.

NOTED EDUCATORS, C. C. TRILLINGHAM (center), Los Angeles County Superintendent of Schools and HELEN RACHFORD (right), Director of the Division of Audio-Visual Education, peruse the new General Telephone Co. brochure, "*Programs For Your Organization*," presented to them by ALFRED J. BARRAN (left), director of public relations for the telephone company. The brochure contains a pictorial listing and description of 204 "free of charge" programs for schools, churches, civic groups, service clubs and other organizations, including live talks, demonstrations and films for all age groups, produced by Walt Disney, Encyclopedia Britannica and the Bell System. Trillingham and Mrs. Rachford recently commended the telephone company for its generosity in providing excellent education films which schools in General's Southern California service area can borrow without charge.

Public Service Programs

General of California's Service Program Aids Educational and Civic Groups

"OVER 50,000 MEMBERS of schools, churches, civic groups, service clubs and other organizations located in our service areas throughout Southern California are now viewing our 'free loan' motion pictures, talks and demonstrations every month," Edwin M. Blakeslee, president of General Telephone Co. of California, recently reported.

"General has been offering this service to the public for over 18 months now. During the next 12 months, based on present scheduling, close to a million men, women and children will witness these popular, cost-free programs," he continued.

C. C. Trillingham, Los Angeles County Superintendent of Schools and Helen Rachford, director of the division of audio-visual education sent a letter of commendation to the company recently, in which they stated: "We especially appreciate your generosity in providing a number of excellent educational films which the schools in your service areas can borrow without charge. A public-spirited program such as yours is achieving mutual benefit for the schools, for the audio-visual field and your company."

A beautiful, enlarged 45-page brochure entitled "Programs For Your Organization" has been issued by the company for the public containing an alphabetical title index and graphic description of the 204 "free of charge" programs, including live talks and demonstrations as well as film programs running the gamut from an "Airplane Trip" to "You, The Human Animal." These films, produced by Walt Disney, Encyclopedia Britannica and the Bell System, appeal to all age groups starting with the primary grades through high school, college and adult levels. As an added convenience all film descriptions are coded to indicate grade and age levels for which programs are especially suitable.—*George R. Bridges, General Tel. Co. of California, Santa Monica.*

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re YOU ready

for the day after tomorrow?

Most informed opinion agrees that nationwide toll dialing will be available within 10 years. It's no news to you that in your business this means *the day after tomorrow.*

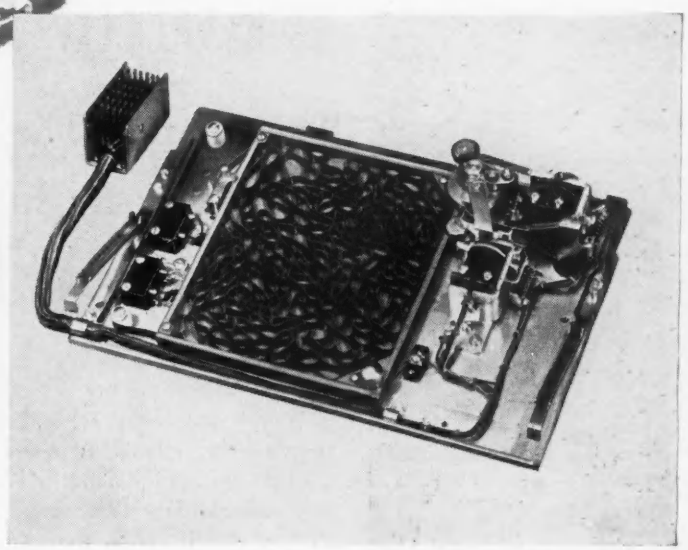
If you want to maintain and increase your profitable toll revenue, you need Stromberg-Carlson XY® toll ticketing equipment now and for the years to come.

As an independent company, your firm must be ready to adapt to the national toll dialing system. Stromberg-Carlson equipment is engineered to do exactly that. It is completely compatible, with routing and rating facilities flexible enough to meet all requirements.

XY toll ticketing does everything—watches traffic automatically, clears recorders on a schedule basis, records data with equal ease on electric typewriter or cardpunching machine.

Your Stromberg-Carlson representative will gladly supply you with full information on the *immediate future* of nationwide toll dialing, and how Stromberg-Carlson equipment can make it a more *profitable* future for you.

"There is nothing finer than a Stromberg-Carlson."



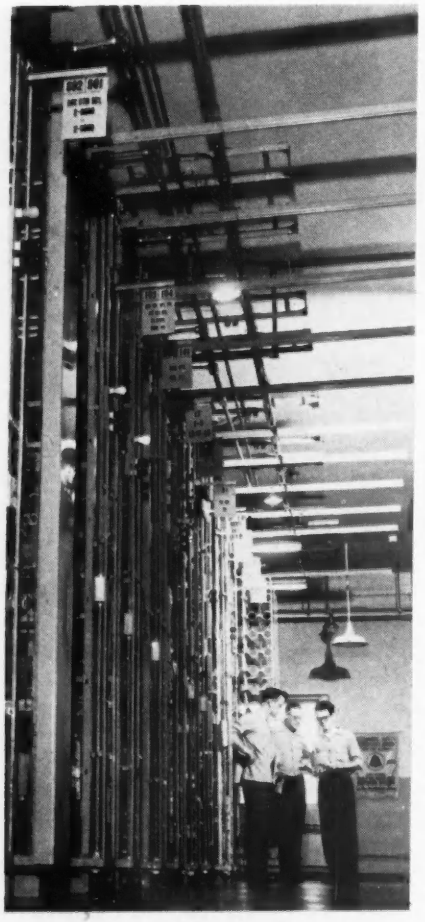
STROMBERG-CARLSON COMPANY

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

IT WOULD take a building the size of Michigan Bell's Sault Ste. Marie exchange to handle all of the company's wrong number calls if the cases could be routed through one office.

THE MOST COMMON dialing duffer is mistaking the letter "O" for the numeral "zero" as anyone of Michigan Bell's dialing service instructors will tell you, including MRS. MARIE POPLER, Webster Traffic (shown above).



ALL OF THIS EQUIPMENT and more would be needed to give "wrong number" service if Michigan Bell could put all of the people who dial incorrectly into one location.

WRONG NUMBERS

They Harass The Customer And They Are Expensive

By ELEANOR HOWARD

"I NEVER leave my car in gear!" said the man who had just smashed through the rear end of his garage . . . . "But, I never leave the iron on," said the distraught housewife as the firemen carried out the charred remains of her newly-purchased ironing board . . . . "But, operator, I never dial the wrong number," exclaimed the unhappy customer who had dialed a neighbor and got some one 150 miles away.

"Us humans," you see, are pretty sure of our habits. We do things so many times they become second nature to us. Sometimes we are so sure of our habits we become, shall we say, a little careless?

Statistically, we don't know how many people fly through the closed end of their garages and we don't know the number of fires caused by innocently heating irons. But we here in Michigan Bell do know how many telephone numbers are dialed incorrectly.

Every day, in just one hour — the busy hour — over 26,000 calls are made that are ineffective. That total is a little over two per cent of the busy hour calls. You can figure it out for our 12 million total calls per day.

These calls make any person who receives them unhappy — especially if he's routed out of bed at three a.m. They make the company unhappy because wrong numbers are barriers to good telephone service and they're expensive to the customers and to the company.

How expensive? Well suppose we could get the people who dial these 26,000 busy hour wrong numbers all in one place at the same time. If we

"DIAL DUFFERS" include Freda Fireball — she can't wait for the dial tone.

LEMMY HELP — he doesn't let the dial go back by itself.

MISS MIXTUP — she can't quite remember the number.

could do this the company could then build an exchange about the size of the one at Sault Ste. Marie. The whole operation would cost in excess of a half-million dollars.

This mis-dialing of calls is a serious problem. The company, therefore, has a serious problem. The company (Michigan Bell), therefore, has an extensive customer- assistance program in operation which is being handled by 65 dial service instructors.

These instructors are part of the Traffic force. Customers who have difficulties are referred to them by assistance operators, as well as by Plant and Commercial work forces.

The dial instructor then calls the customer, asks him several questions about difficulties encountered on his call, and then asks if he would like us to check his dialing procedure on special testing equipment.

Then, any irregularities are discussed with the customer. The instructor urges the customer to jot down the correct number before making each call and take it to the telephone, then refer to the number while dialing.

She also explains the importance of waiting for the dial tone and allowing the dial to return by itself rather than pulling it back.

The letter "O" and the numeral "zero" seem to create a problem for many of our customers, and they will frequently dial one when they meant to dial the other. The dial service instructor explains the difference. Both the letter "O" and the numeral "zero" are in the test number the customer is asked to dial.

UNCLE SLIPSHOD — he's preoccupied, can't bring the dial all the way to the stop.

MISS OH! OH! — the letter "O" and the "zero" have this gal quite confused.

Dialing irregularities frequently occur in areas that have just been changed to dial, or switched to two-letter, five-numeral dialing. In such cases, difficulties on calls as the result of mis-dialing go up several percentage points above normal.

Besides calling customers to explain proper use of the dial, the instructors also appear before community school and club groups as guest speakers.

Booklets containing helpful dialing hints are mailed or otherwise distributed to the customers, also.

It's bad enough to call a friend a few blocks away only to find we have irritated someone on the oposite side of town. But as we approach the day when we shall dial more of our own long distance calls across the country a slip of the finger may misdirect our call by hundreds of miles.

But if we spread the word around to our telephoning friends, and if we dial carefully ourselves, we'll help everyone get the most out of his telephone service. — *Reprinted from "The Michigan Bell."*

A TELEPHONE ENGINEER OPERATING MANUAL

FUSELESS PROTECTION

By JOHN S. REED

UNDER ORDINARY circumstances, electrical voltages and currents in telephone circuits are not dangerous to life nor capable of inflicting damage on telephone equipment or subscriber's property. Telephone wires and equipment are adequately insulated to withstand these voltages and have adequate capacity for carrying the normal currents. Where this is necessary, as in telephone power supply circuits, simple fuses and current limiting resistors are inserted to interrupt the current flow or limit its rise in event of a short circuit.

It is only when contact with a foreign circuit occurs that the telephone lines and equipment may be subjected to higher than normal voltages and currents with the possibility of damage to equipment and property and injury to subscribers and plant personnel. The most common sources of dangerous potentials and currents in telephone circuits are lightning and accidental contacts with power lines or induction from power faults. Contacts with street lighting circuits may also occur.

Not much can be done to prevent direct lightning strokes or the powerful induction created by nearby lightning hits, but suitable protective measures will reduce their effects on telephone plant. In the case of power lines, the main hazard is physical contact with primary distribution lines carried on the same poles with telephone lines or passing over them at crossing points.

Adequate strength of the supporting structures and wires and/or cable, and sufficient clearances between the power and telephone facilities are significant factors in minimizing chances of physical contacts between these facilities. Nevertheless, a heavy storm, a traffic accident, or a defective power insulator may result in contact between these facilities and introduce a dangerous voltage

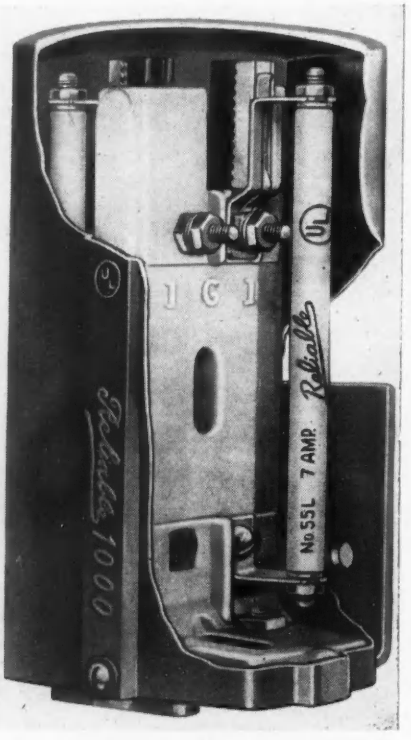


FIGURE ONE: — Reliable Electric Company's fused station protector for outdoor installations. The 1000 Type protector shown has 7-ampere ceramic fuses and sawtooth discharge blocks with carbon blocks.

into the telephone system. Protective equipment is needed to cope with such situations and also handle abnormal induction from the power lines.

Such protective equipment consists of protector blocks, heat coils, and fuses, each adapted to operate at different voltage and/or current ratings. Thus the protector blocks operate to ground a high foreign potential and limit the voltage rise to the rating of the blocks which is approximately as follows:

350 volts—for station and central office protection.

700 volts—for cable and open-wire junction protection.

1000 volts—for "buffer" protection (in open wire about ½ mile or less from junction).

3000 volts—for high-voltage joint use of power and telephone lines, where voltage exceeds 2900 volts to ground.

The heat coil is intended to open the circuit or shunt to ground currents produced by low foreign potentials which cannot operate the protector blocks. Heat coils are associated with protector blocks used in central office protection, and usually operate within 210 seconds on 350 milliamperes sustained flow.

For station protection, protector blocks are combined with fuses in mountings as illustrated in *Figures* 1 & 2. The fuse is designed to open the line on a specified current flow, either the so-called power rating or the telephone rating of the fuse. The power rating commonly used in station protection is 7 amperes and the telephone rating is 5 amperes. The power rated fuse carries its rated current indefinitely and operates in five minutes at 150 per cent of the rated capacity, or 10.5 amperes. The telephone rated fuse operates at its rated capacity.

The idea behind the 7-ampere rating for station fuses originally was that the fuse rating must be low enough so that the fuse will open before the protector itself becomes overheated. At the same time, the rating should be made high enough so that the fuse will not operate on a current flow resulting from contact of a constant-current series-lighting circuit with the telephone line. The older street circuits operated on a constant current of 6.6 amperes at a high voltage, and the contact would cause the current to flow to ground through the fuses and protector blocks. If the fuse were to operate, the voltage might build up to a dangerous value and arcing over might occur at the fuse, causing a fire.

In the case of high-voltage power system contacts, station fuses will blow almost instantaneously with a

A TELEPHONE ENGINEER OPERATING MANUAL

FUSELESS PROTECTION

(Continued from page 40)

heavy current flow, leaving the telephone wires on the line side still at a dangerous potential. Omitting the fuses and relying on the protector blocks to ground the high voltage would subject the protector parts to overheating on heavy current flow with consequent damage and possibly fire on the subscriber's premises.

Fuseless Protection Principle

BY PROVIDING station protectors with high-current conducting parts and arranging the protector blocks to shunt out the air gap on a sustained current flow, the protector can be made to withstand a heavy current without arcing and overheating and the fuses can be eliminated. This heavy current discharge will cause the power system overload protection to operate and de-energize the power lines within a few seconds. In the comparatively rare cases where the power lines fail to de-energize, the station drop or the conductors in the cable terminal stub will fuse, opening the circuit to the subscriber's station.

The "fuseless" type of station protector is designed on the foregoing principle. It is characterized by current carrying parts of large cross section and short path between the protector units and terminal posts, and by small compact protector units. This husky construction assures that these conducting parts and the protector units will carry as much as 30 ampere of current for a period of 15 minutes without overheating, approximating the fusing current of 24-gauge cable connectors.

In *Figures* 3 *to* 5 are shown typical fuseless protectors.

As illustrated in *Figures* 6 *and* 7, the protector units are composed of a round carbon block, a small porcelain cylinder with carbon insert, and an alloy pellet. The whole is contained within a metal cylinder, which may be threaded and provided with a screw head for screwing into a socket or well of the protector, or which may be inserted in a bakelite shell having formed threads and metal cap for screwing into a metal plate, contact with another plate being obtained by a spring on the bottom of the shell pressing against it.

There is an air gap between the carbon block and the carbon insert in the porcelain cylinder across

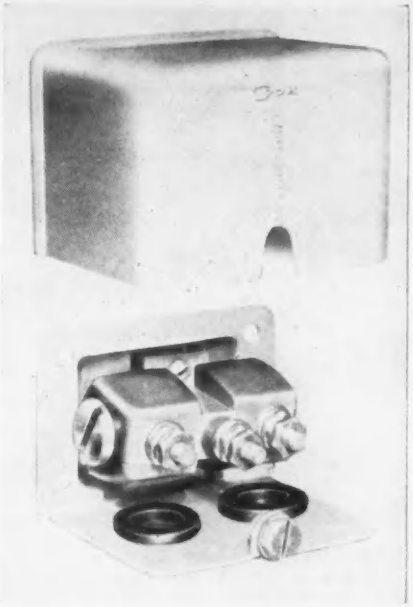


FIGURE THREE: — Cook Electric Company "Interceptor" fuseless subscriber protector. For indoor mounting, the Interceptor consists of moulded Bakelite base with heavy everdur terminal and ground studs and two #41-350 "Minigap" arresters. For outdoor mounting, the Interceptor is enclosed in an all-metal, corrosion resistant weatherproof housing with grommetted bracket as shown. The self-cleaning sealed Minigaps are screw mounted in Bakelite with ground stud and bussed

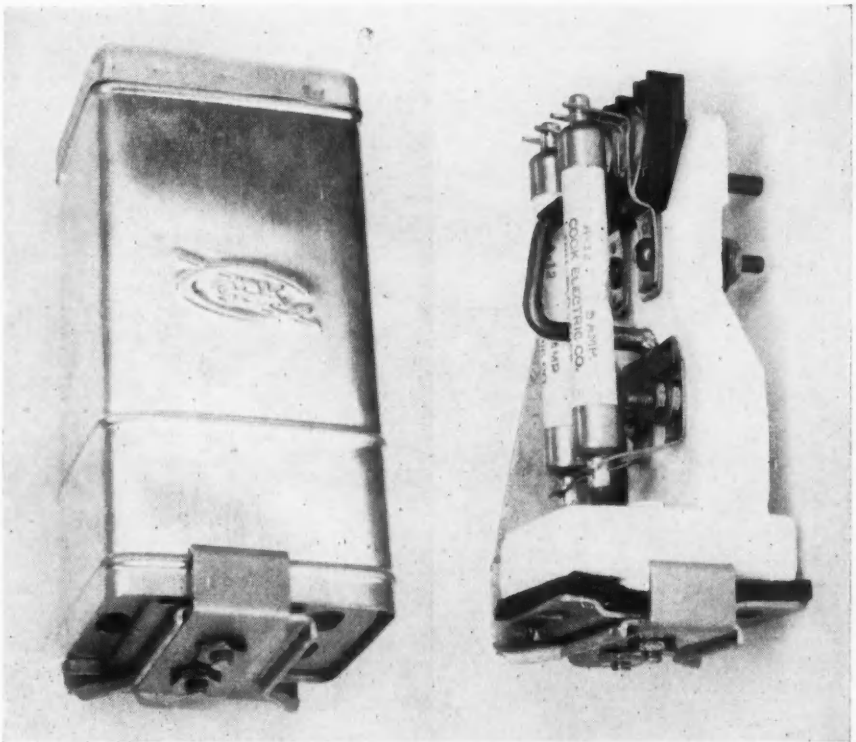


FIGURE TWO: — Cook Electric Company's fused type outdoor station protector equipped with 5-ampere fuses and "Tru Gap" discharger and carbon block combination. The type of protector shown features a secondary surge discharger designed to operate when fuses blow on a power cross, also on heavy discharges.

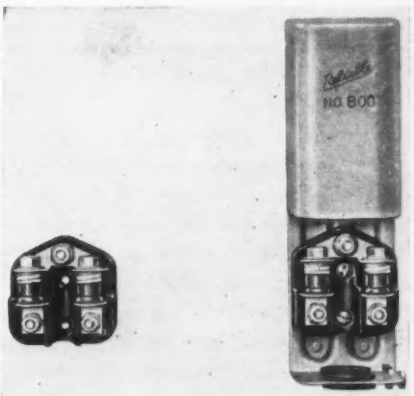


FIGURE 4-A: — Reliable Electric Nos. 700 and 800 fuseless station protectors. At left is the 700 type for inside use, consisting of molded plastic base with bronze terminal and ground posts, and stainless steel ground plate, and mounting two No. 504 protector units. At right is the 800 type which is a No. 700 protector mounted on an aluminum bracket with weatherproofed cover of same material. Knockouts are provided in back for mounting bracket and grommets are used in the wire entrance holes to exclude insects and dirt.

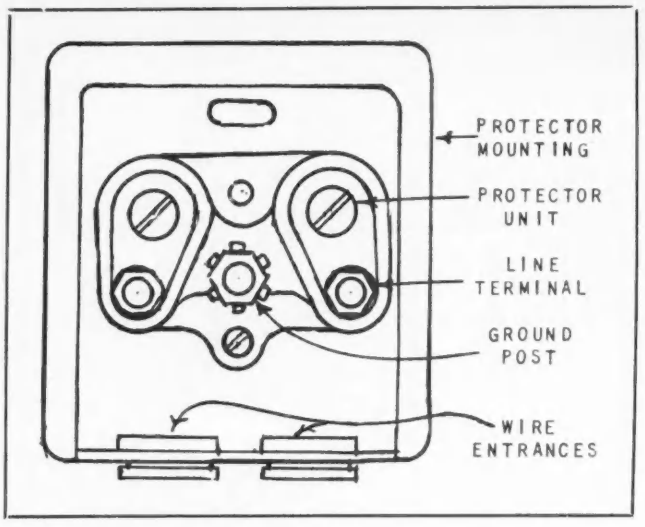


FIGURE FIVE: — Western Electric type fuseless protector designed for indoor or outdoor use. Cover for outdoor use is not shown.

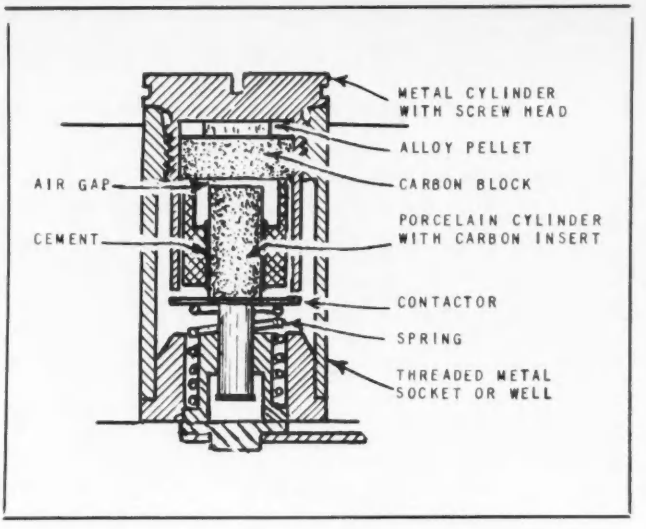


FIGURE SIX: — Protector unit for Western Electric fuseless protector.

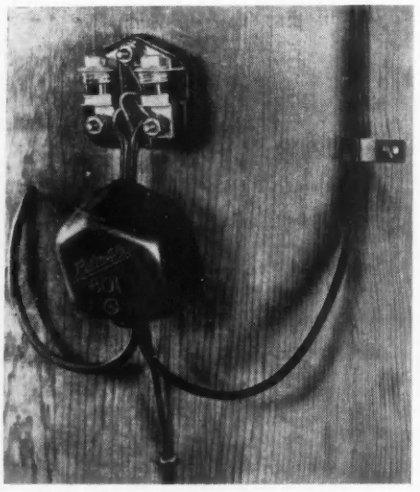


FIGURE 4-B:—Reliable Electric No. 801 Fuseless Station Protector with neoprene cover. This is the same as the No. 800 type except for the snug fitting neoprene cover in place of the aluminum bracket and cover. The cover is shown removed in this illustration to show the simple wiring method that facilitates the installation.

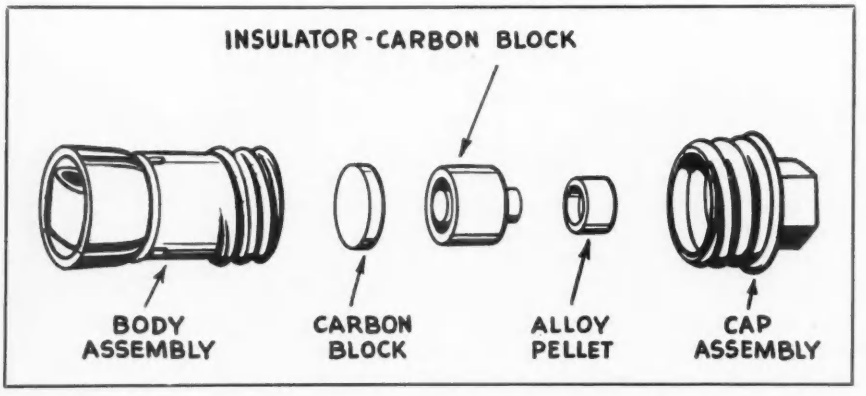


FIGURE 7-A: — Reliable Electric Company No. 504 or 506 protector unit. The No. 504 unit is for station protection and has .0035 inch air gap. The No. 506 unit has .006 air gap for cable protection.

which the discharge to ground takes place. In event of a prolonged heavy current flow, the alloy pellet melts and spreads, causing the spring to press the contactor against the end of the outer metal cylinder and make permanent contact. The current then bypasses the air gap, and the arcing between the blocks stops, eliminating the heating effect of the arc as shown in Figure 7-C.

Usually, more than one station protector will be involved in the power contact fault, resulting in increased fault current flow because of the combination of many fuseless protectors. This assures a more rapid de-energization of the power line.—*To Be Continued*

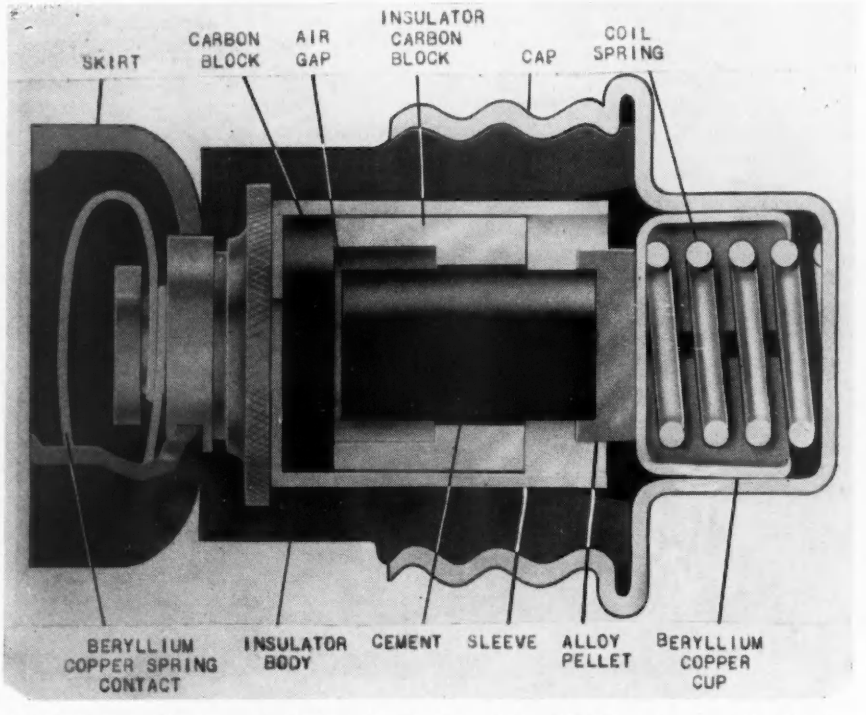


FIGURE 7-B: — This is a detailed sectional view of the Reliable protector unit. The cap assembly contains spring and beryllium copper cup for holding blocks together and providing electrical path for discharge.

Questions and ANSWERS

Conducted by Jay G. Mitchell

In this installment of his popular department, Mr. Mitchell discusses: (A) — An Unusually Difficult Trouble — Peak Voltage; and (B) — How to Insure Clean Cut Dialing Impulses.

QUESTION: — *In a discussion recently, in our local informal spare time study group, the subject of replacing an unusual number of telephone condensers was brought up. This was because in a recently cutover to dial office quite a few of the older condensers temporarily installed had to be replaced with new ones. Most of those replaced were taken from stock for the short period until the new telephones could be installed. While the number that failed was not large it was sufficient to be noticed and the reason for the failures became an interesting subject for study. In most cases the condensers that had to be replaced were shortcircuited but in a few cases they were open. Any comments on this kind of trouble will be very welcome. It seems reasonable to conclude that there is some operating condition in the new central office equipment that is the cause and that this condition was not presented by the old equipment that has been retired from service.*

ANSWER: — It is, of course, impossible to do more than theorize in answering this very practical inquiry unless the condensers that have failed are available and can be dismantled and thoroughly examined. It should be said, in this connection, that modern methods of manufacture keyed to meet the more exacting conditions imposed on equipment of this type by higher standards of service and operating demands have resulted in the production of the modern type of condenser which is much more resistant to destructive conditions than was formerly the case. In other words the modern telephone condenser is probably more rugged than older types.

While the improvement in manufacture has reduced the ratio of failures of condensers there is now and probably always will be failures in operation of some items of equipment in sufficient numbers to justify constant study and consideration of *all the conditions* in order to reduce failure and probable or actual interruption in service. Condenser failure due to lightning *may be minimized*, of course, by proper care of the arrester equipment. Frequent inspection and cleaning, when necessary, of the central office and substation arresters will be found to be justified for the sake of the condensers as well as other items of equipment, for instance, ringers.

Probably the most common cause of condenser failure, outside of defective manufacture is exposure to voltages which are higher than might be normally anticipated. Obviously the destructive higher voltage may have its origin in line trouble or abnormal equipment conditions. These destructive conditions must be located and removed, of course, and in most cases they will be promptly cleared. The incursion of abnormal *direct current* at destructive voltages into circuits containing condensers will be immediately recognized and eliminated.

In circuits carrying *alternating currents*, however, instantaneous *peak voltages* sufficiently high to be destructive to some condensers may be present. These peak voltages are not indicated by the conventional type of alternating current voltmeter. This is because they are of small time duration, contribute a small portion of the *power*, and, except for their insulation breakdown effect are, in conventional telephone equipment, not of great importance.

The conventional alternating current voltmeter indicates, when connected across a circuit carrying alternating current, the *effective voltage component* of the energy transmitted. This indication is the square root of the average of the squares of all the instantaneous voltages through which the alternating current voltage passes. These instantaneous values will range from zero to the highest instantaneous voltage and this instantaneous highest value has a duration, in time, of a very small value.

For this reason this peak voltage is not important in the total power being transmitted, in the usual sense, but it is likely to break down insulation or damage certain items of equipment such as condensers whose working voltage because of deterioration or unsuitable design is lower than it should be. In certain types of equipment, in which even temporary failure is not to be tolerated, care must be taken to select condensers which have sufficiently high working voltage rating to eliminate failure. Obviously this working voltage must be such as will withstand the *peak voltage* to which they will be exposed.

One such arrangement is where an electrolytic condenser and a two-plate rectifier vacuum tube are activated by the secondary of a transformer. A rough rule for such conditions, and this is submitted as a rough rule of thumb only, is to divide the rated output voltage of the transformer secondary by 0.7. For illustration suppose that the rated output voltage of the transformer secondary is 350 volts

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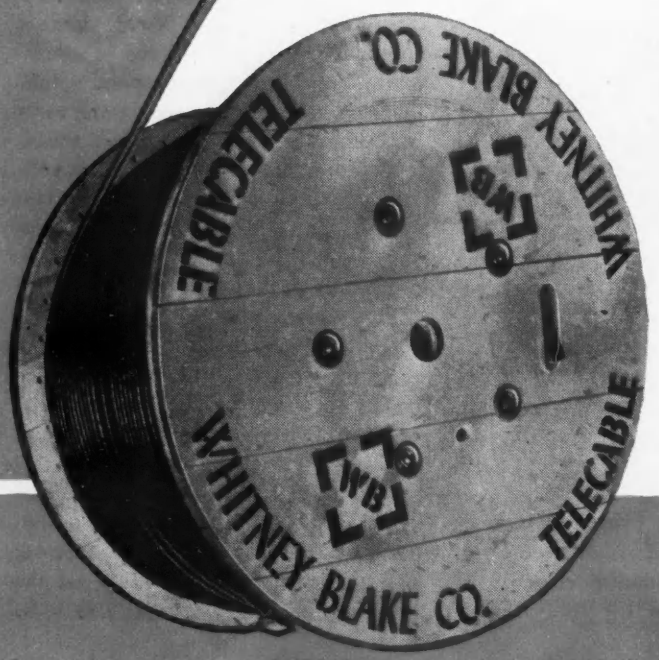

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and this alternating voltage is rectified by a rectifier tube in series with an electrolic condenser for a direct current supply for several communication circuits. In that case it would probably be wise to provide a condenser of the required capacity with a working voltage of at least 500 volts if such is available.

It is suggested to this telephone company that abnormal circuit conditions both in the outside plant and in the central office which might permit excessive voltages to be transmitted and circuit conditions and equipment offering the possibility of high *peak voltages* being created, be eliminated. This may require intensive study but it will be found to be well worthwhile in the maintenance of overall good continuous service.

This inquiry is one of a number which, we regret, was not answered promptly because of conditions entirely beyond our control.

QUESTION: — *Our small company has recently converted one of its exchanges to automatic operation and since this is our first experience with automatic telephone equipment we are finding many things that are new to our men. In the dials which are mounted on the new telephones we find four contacts leading to the instrument wiring. We understand that two of these contacts are for the interruption of the line circuit to provide the impulses for controlling the switching equipment. Will you explain the purpose served by the other two contacts.*

ANSWER: — This inquiry is interesting and, while the name of the manufacturer of this newly installed equipment is not given, it is believed that the inquiry may be answered fully. Two contacts of the dial interrupt the line circuit to create, as stated, the impulses which control the switching equipment. The other two contacts are short circuited together when the dial is *off its normal position*. Their function is to create a closed short circuit around the transmitter circuit of the telephone during daling in order to *eliminate* from the dialing switch controlling circuit the *variable resistence offered by the transmitter*. If not shortcircuitcuited this variable resistance in the line circuit might, especially in the case of long lines, prevent clean breaks and makes between the switch driving impulses with the result of causing inaccurate switching which does not conform to the numbers being dialed. If this is not clear please send in a circuit of your new instruments for specific analysis. — *Jay G. Mitchell.*

Advertisement

How Often Do You Service Your Automobile Spark Plugs?

PERHAPS, after 10,000 miles of trouble-free service, perhaps 20,000 or maybe not at all.

In 10,000 miles of driving, however, each of your automobile spark plugs has fired more than 15,000,000 times in an atmosphere of vaporized hydrocarbons and at a temperature approximately 1800°F. During the explosion the cylinder head pressure is sustained at 150 pounds per square inch and the peak pressure at the instant of explosion is approximately 800 lbs. per square inch or equivalent to the impact of a steam driven pile driver. These conditions are obviously extreme. However, they do establish a standard or series of parameters from which to design a trouble-free lightning arrester.

By simulating the design features of the spark plug and adapting the materials employed to telephone arresters, Cook Electric Company engineers have created a new concept in lightning arrester design. The Mytigap lightning and surge arrester is the resultant product. This new arrester, in fact, also contains an additional advancement in the simple self-restoring feature which further reduces maintenance attention.

The new Mytigap arrester employs no carbon or organic material in its construction. Its discharge electrodes are an alloy of nickle, manganese and RU78. A similar material is used for the electrodes in automobile spark plugs and withstands the arcing and oxidation better than other known material.

For sample, literature and additional information see your distributor or telephone supply salesman.

Exploded View of Cook Mytigap Arrester.

Ernest Ownbey Dies

ERNEST H. OWNBEY, radio engineer for Tennessee Valley Authority, died at his home in Chattanooga, Tenn., on November 25. He was employed by TVA in 1936 and remained with them until his death except for a period of time in which he served in the Navy during World War II.

Mr. Ownbey was Chief of the Radio Section of the Communication Engineering Branch and was responsible for the engineering of the 700-mile microwave system in use by TVA. He was a licensed engineer in Tennessee and was active in local AIEE affairs.

Book Review

"*Improving The Caliber of Company Management*," *published by the American Management Association, 1515 Broadway, Times Square, New York 36, N. Y.; General Management Series* 183; 70 *pages; price*: $1.75.

Although standards of performance have been set for many industrial positions, it has always been difficult to evaluate *executive* performance with any real precision. However, the important role of the executive almost requires that steps be taken to establish value judgments of his performance.

In this new AMA publication, William C. Treuhaft, president of the Tremco Manufacturing Co., shows how his company is setting formal standards of performance for *all* managers — from top executives to first-line supervisors. He indicates that the result of the Tremco plan has been increased understanding by the executive of his functions and responsibilities.

In another paper, Robert H. Bridges, advertising manager of the Cleveland Electric Illuminating Co., describes how his company has made intelligent planning an important part of the executive function.

TELEPHONE ENGINEER & MANAGEMENT'S

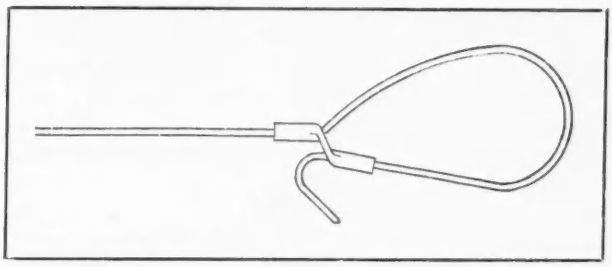
HANDBOOK DATA SHEETS

Prepared By

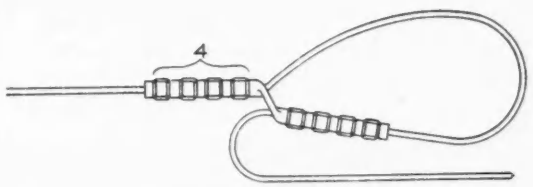
JOHN S. REED

Compression Type Sleeves (Continued)

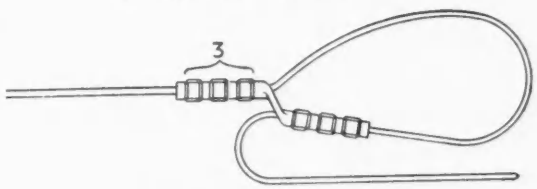
Bend protruding wire around insulator and then through empty part of dead-end sleeve.



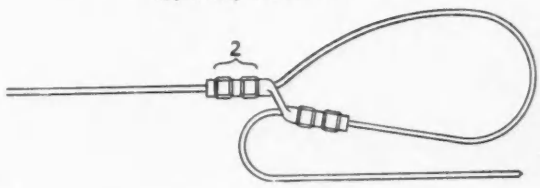
Make two or more squeezes on each end as indicated below. Be sure tool does not touch opposite wire when crimping sleeve.



95-109D135 OFFSET DEAD-END SLEEVE FOR 109 HTL135 OR HTL190 STEEL WIRE



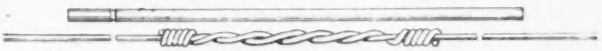
95-109D85 OFFSET DEAD-END SLEEVE FOR 109 HTL85 STEEL WIRE



95-109D 88 OR 92-109D OFFSET DEAD END SLEEVE FOR 109 88 STEEL WIRE
92-083D OFFSET DEAD-END SLEEVE FOR 083 88 OR HTL85 STEEL WIRE
91-102D OFFSET DEAD-END SLEEVE FOR 102 OR 104 COPPER WIRE
91-080D OFFSET DEAD END SLEEVE FOR 080 COPPER OR COPPERWELD WIRE

Using "Nicopress" Repair Sleeves

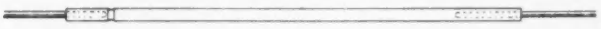
The purpose of Nicopress Repair Sleeves is to restore the conductivity of the line by replacing high resistance splices without changing the sag of the line.



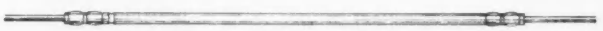
First hold the line with wire-grips and tackle, then cut out defective splice. Clean the wire ends with abrasive cloth.

Slip long end of repair sleeve on one wire-end until the short end of repair sleeve clears the other wire-end.

Then slide short end back onto wire until it reaches stop in sleeve.



Then make compressions with Nicopress tool in the usual manner.



Remove grips and tackle and job is complete.

If sag is to be taken up slightly pull up on tackle before compressing sleeve until proper sag is obtained. Then make the compressions.

Adjustment of Nicopress Pressing Tool

For good splices, the pressing tool should maintain a uniform pressure in compressing sleeves. Slotted gauges are provided for checking the outer dimensions of the pressed portions of the sleeve to determine if the correct pressure has been applied. If the gauge enters with barely sufficient pressure when the slotted end is slipped over a compressed portion of the sleeve at right angles to the fins, the tool is properly adjusted. If the compressed sleeve will not enter the slot, the tool is readjusted by turning an adjustment screw with a wrench a fraction of a turn at a time until the compression is just right on checking with the gauge.

Va. Tel. & Tel. Gets OK for Stock Issue

VIRGINIA Telephone & Telegraph Co., has been authorized by the Virginia Corporation Commission to issue, 10,200 shares of its $10. par value common stock.

In another order the commission authorized Central Virginia Electric Co-operative to borrow $530,000 from the Rural Electrification Administration with the understanding the funds will be used to construct an additional 100 miles of line to serve about 1,000 customers.

B. C. Tel. Announces Largest Construction Program

BRITISH Columbia Telephone Co., Vancouver, B. C., reports it will spend $40,000,000 in 1957 for expansion and improvement of existing services. This compares with $28,000,000 spent in 1956, highest total spent to date.

A three-year expansion program, including 1956, 1957, and 1958, will require total expenditure of $100,000,000 W. S. Pipes, vice-president and general manager, states.

The increase in telephones in service in 1956 will be 40,000 compared with the previous record of 27,601 in 1955 — the waiting list for telephones was reduced to 5,426 at the end of October from 11,274 at the start of 1956.

Teletype Link Will Mean More Trading With Europe

THERE WILL be more trading between Canadian and foreign markets now that a teleprinter link with Europe has been opened.

This is the view of brokers in Toronto and Montreal, where the first European-linked teleprinters were installed last month.

The teleprinter service has become possible since the trans-Atlantic submarine cable was opened in the fall of 1956. Subscribers in Montreal, Toronto, and Ottawa can now have a direct hook-up with some 30,000 European subscribers. An extension to Winnipeg, Calgary and Vancouver is expected soon.

Arranged jointly by Canadian National and Canadian Pacific Telegrams, Canadian Overseas Telecommunications Corp., and the Commercial Cable Co., the service is open 24 hours a day and is paid for in the same way as long-distance telephone calls. Charges are made at a rate of $9 minimum for three minutes and $3 for additional minutes. The service rate is $35 per month.

In Toronto, the first two subscribers to have teleprinters installed were the brokerage firms Ronald D. Smith & Co., and James Richardson & Sons. Both have extensive business with European clients.

Although the service is available to

Signal Officer Visits West Coast

THE ARMY'S Chief Signal Officer, MAJ. GEN. J. D. O'DONNELL (right), was guest speaker at recent meetings of the San Francisco and Los Angeles Councils of the West Coast Electronic Manufacturers' Association. While in the San Francisco Bay Area, the general toured the San Carlos plant of Lenkurt Electric Co., carrier and microwave firm, accompanied by COL. S. S. CERWIN (left), Sixth Army Signal Officer, and CARL ROE, Lenkurt's commercial relations manager. The Signal Corps visitors saw prototype models of communications equipment now under development by Lenkurt.

anyone, brokers are expected to be the main users. The teleprinter will overcome delays in cable transmission to many European countries, making possible more trading with countries like Switzerland, Germany, and France.

It is planned soon to link Canadian teleprinter users with Hawaii and the Philippines. In mid-1957, Japan, Brazil, Argentina, Cuba and Puerto Rico will be added and in late 1957 Chile, Peru, Uruguay, Venezuela and Mexico.

Kansas State Tel. Co. Wins Rate Adjustment

KANSAS STATE Telephone Co., Baxter Springs, Kans., has announced a rate increase, effective December 1, in accordance with provisions made by the Kansas Corporation Commission.

The rate increase has been pending since May, when a hearing was held in Baxter Springs. The increase amounts to 25 cents a month per instrument.

A slight increase had been granted March 1 and, following a hearing, the state commission took the case under advisement and rejected the increase until specified improvements in equipment, services and subscriber relations were made.

Following a review of the case the increase was allowed.

Rates for business lines and one-party handsets will be $6.50 in Baxter Springs and Galena and $4.50 in Scammon. For one-party desk sets, $6.50 in Baxter Springs and Galena and $4.25 in Scammon. Business extension telephones will be increased to $1.50 for handsets in all three towns served by the telephone company.

Residence rates will be increased to $3.75 for one-party handsets in Baxter Springs and Galena and $3.25 in Scammon. The increase for four-party handsets will bring the rate to $2.75 in Baxter Springs and Galena and $2.50 in Scammon. Extension telephones for residences will be $1.00. Rural handsets will be increased to $3.25 in Baxter Springs and Galena and $3 in Scammon.

Electronics Symposium Scheduled For May 1-3

THE 1957 Electronic Components Symposium — co-sponsored by four leading organizations — will be held May 1-3 at the Morrison Hotel, Chicago, Ill. More than 1,000 persons are expected to attend the three-day meeting dealing with the latest developments in electronic components.

The symposium is sponsored annually by the American Institute of Electrical Engineers, Institute of Radio Engineers, Radio-Electronics-Television Manufacturers Association, and West Coast Electronic Manufacturers Association.

The meeting also has the active participation of agencies of the Department of Defense and the National Bureau of Standards.

Papers will be given in eight areas: high temperature components, radiation effects, component reliability, passive components, active components, instrumentation and measurements, materials development, and general component needs.

Symposium committee chairmen are: R. M. Soria, Amphenol Electronics Corp., general chairman; V. H. Disney, Armour Research Foundation of Illinois Institute of Technology, technical program; J. S. Powers, Bell and Howell Company, arrangement; J. H. Enenbach, Illinois Bell Telephone Company, finance; R. R. Jenness, Northwestern University, proceedings, and V. J. Danilov, Illinois Institute of Technology, publicity.

Information concerning the symposium can be obtained by writing to J. S. Powers, Electronic Components Symposium, 84 E. Randolph St., Chicago 1.

"Telephone For The Governor"

The one-millionth telephone in the state of Virginia was recently installed in the Virginia governor's office. Shown above are: (l. to r.) THOMAS B. STANLEY, Governor of Virginia; DENNIS B. DRAPER, past president of the Virginia Independent Telephone Association, Staunton, Va.; WALTER G. ROBINSON, President, Virginia Independent Telephone Association, Warsaw, Va., and J. RHOADES MITCHELL, vice president and general manager of C & P Tel. Co. of Va., Richmond.

Ervin Rauss Purchases Oklahoma Exchanges

ERVIN RAUSS, Pryor, Okla., has purchased the Welch-Bluejacket Telephone Exchange from Mr. and Mrs. George Bennett.

The new owner was employed for 33 years by Southwestern Bell Telephone Co. The Bennetts had operated the exchange since May, 1954.

REA Reports New Loan Authorizations

THE U. S. DEPARTMENT of Agriculture has announced that the Rural Electrification Administration made the following loans for the improvement and extension of telephone service in rural areas:

GEORGIA: Plant Telephone & Power Co., Tifton, Ga.; second loan, $315,000, to improve and extend rural telephone service in Treutlen county.

The borrower plans to use these loan funds to furnish new and im-

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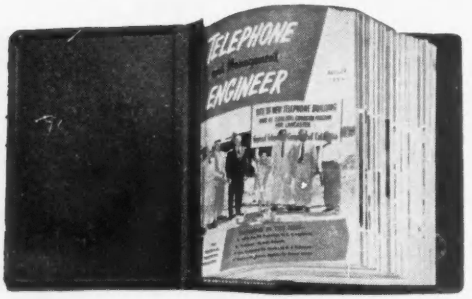

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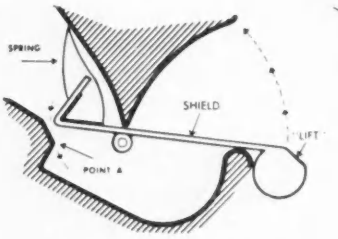
Mount Stahl Utility Side Boxes on any make or model of pick-up truck. All-steel, welded, furnished complete with mounting brackets, bolts and instructions. Keep your tools dry, safe, organized. Thousands of pairs in use. *Write today for Literature and Name of Nearest Distributor.*

STAHL—BUILDER OF UTILITY BODIES FOR THE NATION'S BEST-KNOWN UTILITIES.

Don't Be Cheated By Coin Return Chute Stuffers



Install THE SHIELD* Coin Return Protector

Deliberately plugged Coin Return Chutes cut Pay Station revenue because many customers assume that telephones are out of order if their coin is not returned. They are also a source of bothersome complaints, and can lead to substantial losses if refunds claimed by customers are not covered by collections from the station (as a result of stuffed chutes). Aware of this drain on revenue, the world's largest telephone company is replacing its entire coin return chute mechanism in almost all pay stations . . . at considerable expense . . . in an effort to eliminate chute stuffing. Now, with The Shield Coin Return Protector — the *only* anti-stuffing device available to independent telephone companies — you can gain similar protection, on any make pay station, at less than one-third the cost of replacing entire chute mechanisms.

*Patent Pending **WRITE FOR CIRCULAR 455-A**

BUCKEYE TELEPHONE & SUPPLY CO.
1250 KINNEAR ROAD **COLUMBUS 21, OHIO**

YOU USE FEWER REPEATERS and **REDUCE UNIT LOSS** WITH

CEECO Loading Coils

By applying coils on telephone circuits, the unit loss can usually be reduced to one-third or one-fourth non-loaded value. It is possible to avoid use of repeaters in many cases by extending the transmission range, or use fewer repeaters. The voice frequency loading coils are designed for use on two-wire telephone circuits in the non-quadded paper insulated or plastic cables. Coils can be furnished for quadded inter-office trunks and toll entrance cables. **WRITE FOR FREE CIRCULAR 5-55A**

BUCKEYE TELEPHONE & SUPPLY CO.
1250 Kinnear Road **Columbus, Ohio**

proved telephone service to 663 subscribers in its area. This includes 272 farm families and other rural residents now without service. As a nucleus for this additional service, the Plant company proposes to acquire the Soperton Telephone Co. and Denton Rural Telephones at Soperton. These facilities are now providing magneto and common battery service over 83 miles of line to 391 subscribers. The borrower has been operating the Soperton company since April, 1956.

The REA loan will enable the borrower to construct a new dial central office building in Soperton and add 75 miles of new line. Of the present line, 83 miles will be rebuilt and the remainder retired.

The two REA loans to this company total $1,055,000 which will make possible new and improved service to 2,246 rural subscribers in Atkinson, Colquitt, Cook, Crisp, Tift, Treutlen and Worth counties. The system will consist of 616 miles of line. Dial exchanges at Lenox, Omega, Pearson, Warwick and Willacoochee are now in operation. James P. Gleaton is president and manager of the Plant Telephone Co.

MAINE: Unity Telephone Company, Unity, Maine; $121,000, second loan. The borrower proposes to use these funds to complete the system as originally planned in the first loan, to provide for an increase in the proportion of private and semi-private lines, and to construct a new combination dial central office and commercial office building in Unity. Original plans had provided for rented headquarters in Unity.

The two REA loans to the Unity borrower totaling $415,000 will enable it to provide dial telephone service for 904 rural subscribers in Kennebec, Penobscot and Waldo counties. The system will consist of 215 miles of line and dial central offices at Albion, Newburg and Unity. E. D. Chase is president and manager of the Unity Telephone Co.

TEXAS: Caldwell County Telephone Co., Dale, Texas; $394,000, first loan. The new borrower is a commercial corporation which plans to use the loan funds to provide modern dial service for 766 subscribers in Caldwell, Bastrop, Guadalupe and Hays counties. 301 of these would be new subscribers who do not now

(Please turn to page 53)

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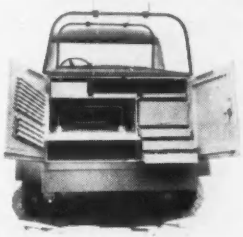

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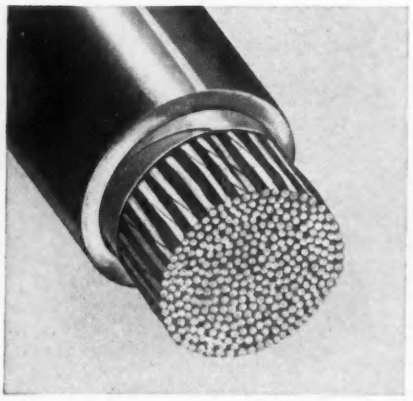
by Gerald C. Gaydos, Inside Sales—Chicago

In my spare time I like to do crossword puzzles, but there's never any puzzle about the advantages of ordering supplies from Stromberg-Carlson. No matter where you're located, you're protected by a double guarantee on the fine products you order from Stromberg-Carlson . . . ours, and the maker's. This way, when emergencies make special demands—you're not alone. You find **two** solid companies right beside you, eager to help. That's how our 62-year reputation in the industry has grown. That's why it pays you to order from Stromberg-Carlson—leader in the research for new and better telephone equipment. We'd like you to know we appreciate your support.

Uniformity, Dependability, Lasting Service

When you've said that about cable you've covered about everything.

Kennecott Telephone Cable fills the bill in uniformity, dependability, lasting service for our telephone cable customers.

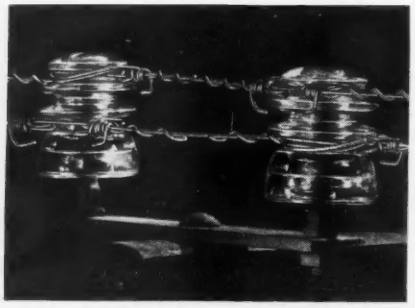


Before a single inch of Kennecott cable leaves the mill, it is tested for Dielectric Strength, Insulation Resistance, Conductor Resistance, Capacitance and Fixed Dimensions. Such care in manufacture is your warranty of efficient, trouble-free performance in the field.

Specify Kennecott — distributed by Stromberg-Carlson.

Smaller, lighter insulator for point transposition

Weighing almost 25% less than its predecessor, the Hemingray Number 56 insulator has several important advantages. It's grooved just right to hold wire firmly. It's small and easy to install. Requires **no** special hardware, and goes on standard pins.



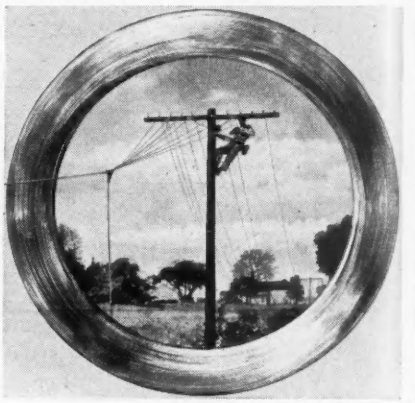
You'll get years of reliable service from each Hemingray insulator, because they are unaffected by sudden or seasonal temperature changes, do not age or deteriorate. All surfaces are, of course, impervious to moisture.

For faster line work on rural lines, this one-piece insulator can save you installation time, and maintenance costs.

This top performer brings you low-budget operation

If you'd like to reduce the cost of installing and maintaining telephone lines, may we suggest a rugged wire that staunchly defies wind, ice, and snow?

Copperweld Telephone Line Wire is known as a faithful friend, having wonderful transmission qualities and long, rust-resisting life. It lasts and lasts and lasts—saves you maintenance or replacement costs.

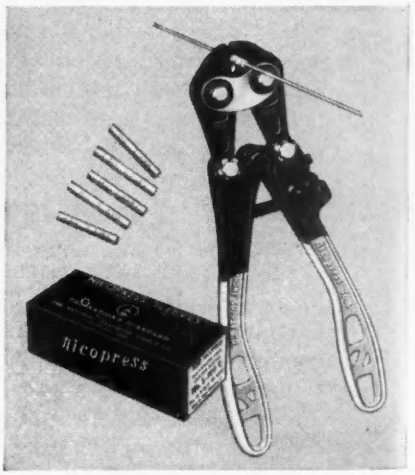


Copperweld Line Wire "talks better," and cuts your maintenance costs.

For short subscriber loops and secondary toll lines, we recommend .080"-30 E.H.S. and for toll lines and long subscriber loops, .104"-40 H.S.

High-speed splice outlasts the wire itself

You can cut half the time off splicing wires—and get a splice that will actually outlast the conductor itself!



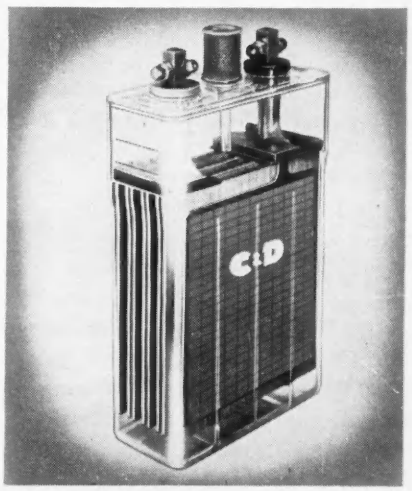
Available for all types of wire: Nicopress sleeves. Special Nicopress tool is easy to use.

Because it is stronger than the rated breaking strength of the wire, you just can't pull apart a joint made with the Nicopress sleeve. It will withstand the toughest strains of vibration, yet makes a neat, compact splice that you can use on drop or inside wires as well as other lines. A tough inner alloy lining—harder than either the sleeve or the conductor—is the secret of Nicopress sleeves' strong grip.

To apply Nicopress sleeves quickly and simply, use the Nicopress tool, which is specifically designed to work together with the sleeves for high-speed splicing.

Battery will live 25 years

A quarter of a century is the expectancy of an extra-life battery made by C & D Batteries, Inc. In full-float service, their PlastiCal (lead calcium grids) battery will serve your power needs faithfully—often well beyond its 25-year expectancy.



It'll be 1979 before you even have to *think* about replacing this extra-life C & D battery, if you install it now!

C & D Batteries' PlastiCell (high tensile, special alloy grids) battery offers reliable power supply at lower cost, with a life expectancy of 14 years.

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The 1956 Nobel Prize in Physics has been awarded to DR. WILLIAM SHOCKLEY, DR. WALTER H. BRATTAIN and DR. JOHN BARDEEN (left to right above) for their invention of the transistor. The three physicists are shown at Bell Telephone Laboratories in 1948, discussing the crystal structure of semiconductive materials which form the heart of the transistor. It was through such purely theoretical studies and extensive laboratory investigations that the new physical principle on which the transistor functions was discovered and explained. The transistor invention was announced by Bell Laboratories in 1948.

have telephones. Of the 465 existing subscribers, 208 get magneto service from the Fentress Telephone Co. The Caldwell County company proposes to acquire these systems with its own funds.

Existing line of the three systems amounts to a total of 124 miles. The borrower plans to retain 12 miles of this line in place, rebuild 104 miles and retire the remainder. There would be 118 miles of new line, and unattended dial offices would be constructed in Dale, Lytton Springs, Martindale and Fentress. E. K. Veach is president and manager of the Caldwell County Telephone Co.

WISCONSIN: Cream Valley Telephone Co., Hawkins, Wis.; $146,000, fourth loan. The company expects to use these loan funds to furnish initial service to 107 families now without telephones and to improve service for 89 present subscribers in Price and Rusk counties. To accomplish this, the borrower plans to acquire the facilities of Consolidated Utilities, Inc. This system is now serving 89 subscribers over 47 miles of line through an exchange at Glen Flora.

The borrower's plans include a new dial central office at Glen Flora and 51 miles of new line. Of the existing line, 14 miles will be used in place in the expanded system, 31 miles will be rebuilt and the remainder retired.

Loans to the Cream Valley company total $411,000, which will enable it to provide new and improved service to 770 rural subscribers over 266 miles of line. The system will have three exchanges, of which Kennan and Hawkins are already in operation. Robert N. Price is president and William A. Steventon is manager of the Cream Valley company.

Cook Electric Names Hanway, Fla. Dist. Mgr.

B. FRANKLIN HANWAY has been appointed to the new position of Florida district manager for Cook Electric Co. He will be in charge of

the company's new Florida district sales office, to be located at 900 NE 12th St., North Miami. The office was opened December 10 to serve customers of Cook Electric Company's family of subsidiaries in Florida and the Caribbean area, including U. S. Defense Department installations.

A member of the Society of Automotive Engineers and the American Ordnance Association, Mr. Hanway was formerly sales engineer in charge of the Baltimore office of The Revere Corp. of America.

A. E. Co. Names Jones, Installation Chief

HARRY C. JONES has been appointed superintendent of installation and service at Automatic Electric Co., Chicago, Ill., succeeding V. L. Bunkelman who has retired.

Mr. Jones joined Automatic Electric in December, 1937, and has held the positions of project engineer, executive assistant to the chief engineer, executive assistant to the president, staff engineer, supervisor of Government contract engineering, supervisor of systems engineering, assistant superintendent of engineering and assistant superintendent of installation and service prior to his new appointment.

Mr. Bunkelman has been with Automatic Electric since 1915.

New Assignments For Four Sales Engineers

FOUR Stromberg-Carlson sales engineers have been given new assignments in a move to strengthen the company's service to customers in certain areas, according to an announcement by T. C. Thompson, general sales manager of the Telecommunication Division of Stromberg-Carlson, a division of General Dynamics Corp.

Morris L. Hansen has become a member of the expanding National Sales Engineering staff in Rochester, N. Y.

Kenneth J. Terry has returned to Rochester from the San Francisco office, and has joined the Industrial Sales Group.

Edward T. Ferguson has moved back to the Southeast from San Francisco, and is a sales engineer in the Atlanta branch.

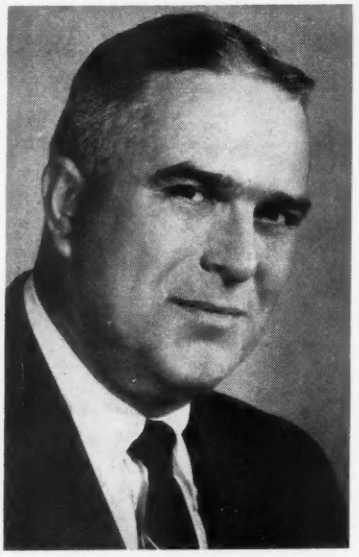
Kenneth J. Kelly has transferred from the Kansas City branch to San Francisco as a Sales Engineer in the West Coast branch.

Mr. Hansen, who received his early schooling and college education in Iowa, joined Stromberg-Carlson in 1946 after many years of experience with telephone operating companies in Iowa, Kansas and Alaska.

Mr. Terry has spent all of his working years with Stromberg-Carlson most of that time in Rochester. He joined the company in 1942, and worked about a year as an inspector before three years of service with the USAAF in Europe. On returning to Stomberg-Carlson after the war he worked on telephone installations before joining the sales engineering group.

Mr. Ferguson was born in Los Angeles. After school and college work there, he moved to Texas, where for eight years has was an installation and servicing supervisor for the Southwestern Associated Telephone Co. (now General Telephone Co. of the Southwest). He joined Stromberg-Carlson in February, 1947, as an installation foreman, and later became resident service engineer in Florida. On January 1, 1955, he became chief installer for the Telephone Division. Just prior to his present assignment he was a sales engineer in the San Francisco branch office.

Mr. Kelly has been a sales engineer in Stromberg-Carlson's Kansas City branch office for the past year. A native Iowan, he attended Iowa State College and Loyola University. He served in the U. S. Navy from 1937 to 1941. On discharge from the Navy Mr. Kelly worked for Western Electric Co., and for four years prior to joining Stromberg-Carlson he was a consulting engineer with Carl C. Crane, Inc., working on telephone contracts for the U. S. Air Force.



GEORGE B. EARL has been named sales manager, Service Body Division, Morrison Steel Products, Inc., Buffalo, N. Y., manufacturers of service-type truck bodies for all makes of trucks. Mr. Earl will be responsible for directing all sales activities for Morrison Service Bodies and Accessories to both the vocational service trades and the public utilities. He has served as a sales manager in the electrical supply field; regional manager for Curtiss Wright Corp.; and, for the past 11 years, as a department manager with the Ford Division of the Ford Motor Co.

Philco Acquires West Coast Electronics Company

PHILCO CORP., has purchased the Sierra Electronic Corp., San Carlos, Calif., in a major move to expand its research, engineering and development facilities.

The Sierra Electronic Corporation, a research and instrument manufacturing concern, will be operated as a wholly-owned Philco Corporation subsidiary under its current President, Willard Feldscher, as Vice President and General Manager, according to J. Skinner, Philco pres.

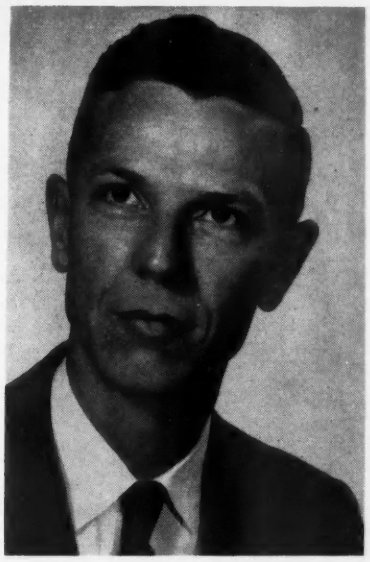
With the acquisition of Sierra Electronic, Philco will have 42 plants located in 10 cities throughout the country with a total manufacturing space of approximately 5,000,000 square feet.

Sierra Electronic Corp., was organized in 1945. In addition to classified electronic equipment for the military, Sierra manufactures specialized electronic test equipment, UHF transmitters, television studio equipment, radio navigation equipment and microwave relay links.

General Tel. Directory Elects Two Officers

LAST MONTH General Telephone Co., Des Plaines, Ill., announced the election of John D. O'Neil as Secretary and Miss Hazel Lange as treasurer of the company.

At the same time the company announced that H. Duncan Price, Jr.



JOHN D. O'NEIL

has joined the company as sales administrative assistant to the Eastern and Western area sales managers.

Mr. O'Neil, who will continue serving as controller in addition to assuming the corporate duties of secretary, has been with the company for eight years. Prior to becoming controller

MISS HAZEL LANGE

he worked as an accountant for both the Western and Eastern areas.

Miss Lange has been associated with the telephone industry for many years, particularly in accounting operations. She joined Theodore Gary Co. in 1926 and remained in its employ until its merger with the General Telephone Corp. in 1955. She has been a member of the staff of General's executive group in Des Plaines since March 1956.

Mr. Price, in his duties as assistant to Roland Beard, vice president and

Please turn to page 60

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BUYERS' GUIDE

ADVERTISING, Directories — *General Telephone Directory Co., 1800 Busse Highway, Des Plaines, Ill.*—[ADV. 1]

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, *W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.*—[ADV. 2]

BOOTHS—Acoustic Telephone — *Sherron Metallic Corp., 1202 Flushing Ave., Brooklyn 6, N. Y.*—[ADV. 3]

CORDS, Switchboard (with or without plugs), Instrument (retractable and regular) and Operators — *Commercial Cord & Supply Co., Inc., 26 Main St., Clifton Springs, N. Y.*—[ADV. 4]

CORDS, Switchboard & Telephone — *Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.*—[ADV. 5]

INSULATORS, Porcelain — *Porcelain Products Inc., Box 300, Findlay, Ohio.*—[ADV. 6]

PIPE PUSHERS — *Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.*—[ADV. 7]

POLE HOLE DIGGERS — *For derrick mounted trucks. Tele-E-Lect Products, Inc., 9613 Minnetonka Blvd., Minneapolis 26, Minn.* —[ADV. 8]

POLES, Southern Yellow Pine — *Taylor Colquitt Company. 217 E. Main St., Spartanburgh, S. C.*—[ADV. 9]

POLES, Southern Yellow Pine — *Texas Creosoting Co., Orange, Texas.*—[ADV. 10]

PROTECTIVE EQUIPMENT — *Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.*—[ADV. 11]

REBUILT TELEPHONES & SWITCHBOARDS — *Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 26, Ill.*—[ADV. 12]

TRUCK BODIES — *Highway Trailer Co., Edgerton, Wisc.*—[ADV. 13]

WIRE, Insulated — DATED DROP WIRE — Neoprene or Weatherproof — *Alphaduct Wire & Cable Co., New Brunswick, N. J.*— [ADV. 14]

WIRE, Insulated Drop and Bronze or Copperweld — *Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.*—[ADV. 15]

WIRE, Telephone, for all inside and outside uses — *Whitney Blake Co., New Haven, Conn.*—[ADV. 16]

A TE&M Service Department

NEW PRODUCTS

IN THIS ISSUE our New Product editor describes and offers free information on — (1) a newly-designed carrier for use with a truck mounted crane; (2) a new development in shelving.

Truck Equipment

PITMAN MFG. CO. has announced production of an especially designed carrier, available as an optional with the Pitman Hydra-Lift, truck-mounted crane with maximum lifting capacity of 6500 lbs.

In announcing the new carrier, Pitman Manufacturing also announced availability of three other new optionals which greatly increase the Hydra-Lift's usefulness. One of these is a new type of boom that makes it possible to haul much higher capacity loads on any truck the Hydra-Lift is mounted on. The Hydra-Lift also is available with a hydraulically-driven loadline winch, plus a basket which can be attached to the boom tip for lifting a man into the air.

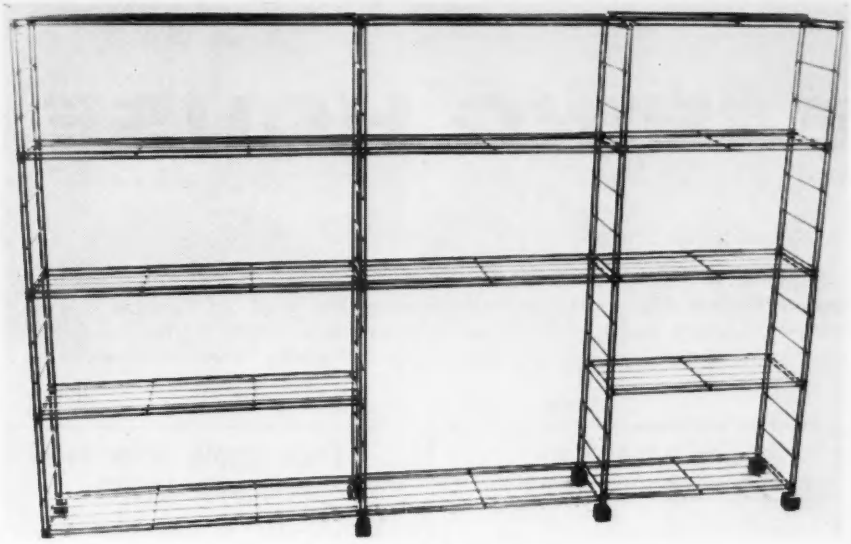
The new cab-beside-engine carrier has a wheelbase of only 144 inches, permitting operation in extremely close quarters, yet there is also 144 inches of free space between the crane and the end of the frame. The Hydra-Lift, which also can be installed on conventional trucks two tons and larger, requires only 44 inches behind the cab—For complete data, *Check New Product* 100.

New Shelving

A NEW development in steel rod shelving has been introduced by Metropolitan Wire Goods Corp. Called Erecta Shelf, it is assembled without nuts, bolts or screws. Two features of this shelving are its quick assembly and heavy load capacity.

The material used is heavy weight

Above Pitman Hydra-Lift is shown stringing pipe with new optional high-mounted boom that makes it possible to hold much higher capacity loads on any conventional truck two tons or larger.



New steel rod shelving.

steel rod, into which notches are cut to close tolerance so that the shelves and uprights are locked in place. The notched wires slide easily into place and assembly take only a matter of minutes. The shelving and uprights are plated after fabrications.

Uprights are constructed so that shelves can be spaced at 5″ intervals.

One person can assemble the average unit in 10 minutes without special tools. Dismantling is even faster. Repeated assembly and dismantling will not harm the shelves. Cleaning is simple. Erecta Shelves can even be hosed down if practical. There is a leveling device on the foot of each upright, to compensate for pitched or uneven floors.

Erecta Shelves come in 12″ and 18″ widths and are 24″, 36″ and 48″ long. The uprights are 4′3″, 5′3″, 6′3″ and 7′3″. Shorter uprights can be obtained by cutting down the longer ones. Width of shelves can be increased by doubling the units. Brackets are supplied to join the units together.

A standard weight shelf, as distinguished from the above heavy duty, is also available in 12″ widths and 24″, 36″ and 48″ lengths. This construction is lighter and does not incorporate the "railroad bridge" design. It is suitable for lighter shelf loads.—For complete data, *Check New Product* 101.

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NP 100..... NP 101.....

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ADV. 16.....

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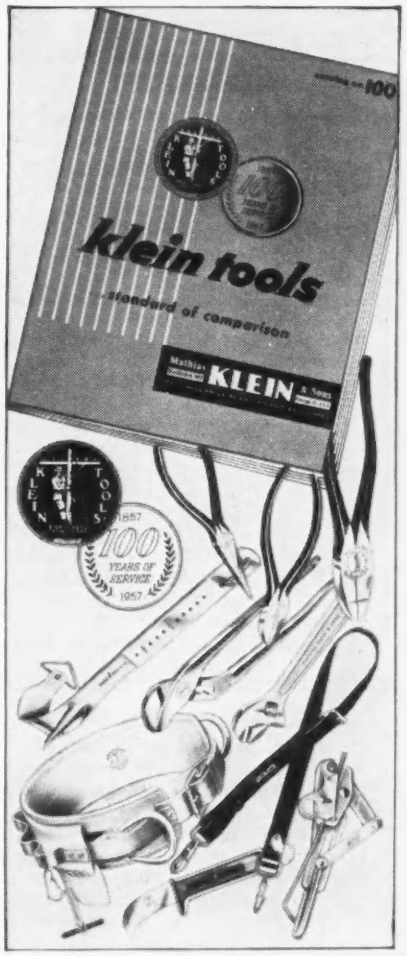

100 years ago in 1857, Mathias Klein opened a little forge shop in Chicago. Out of this has grown the national institution known as Mathias Klein & Sons.

To dramatize this 100 years of service to industry, Klein has prepared a completely new catalog.

It contains illustrations and descriptions of the wide range of pliers, grips, climbers, belts, safety straps—the tools and equipment needed by linemen, electricians and industry.

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This Klein Catalog No. 100 will be of interest to linemen—electricians—good workmen everywhere. A copy should be in the hands of every purchaser of good tools. Write for yours.

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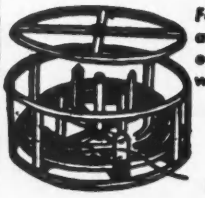

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UNITED UTILITIES, INCORPORATED

47th Consecutive Dividend

The Board of Directors declared a quarterly dividend of 30 cents per share on the outstanding common capital stock of the company, payable on or before December 31, 1956, to stockholders of record at the close of business December 10, 1956.

Abilene, Kans. December 4, 1956

ALDEN L. HART, President

$170,000,000 Expansion Project

Bell of Canada Plans Record Program

A RECORD $170,000,000 will be spent by the Bell Telephone Co. of Canada in 1957 to expand and improve telephone service in Ontario, Quebec, Thomas W. Eadie, the company's president, told the Toronto Junior Board of Trade recently.

Most of the capital requirements of the telephone business must be raised outside the company, Mr. Eadie noted. Telephone rates are regulated and are intended to cover the cost of furnishing service and to provide a small margin for surplus.

"We can raise capital on reasonable terms only if the investor has confidence in the company. To preserve such confidence we must maintain good earnings, a sound financial structure and a surplus adequate to carry us through any lean period," Mr. Eadie said. "This requires the careful programming of all construction activity. Sudden stops and starts would cause costly wastage of men, money and materials. We are arranging to spread out certain items in our program, assigning them priority based on the economies and improvements in service they will produce."

The $780,000,000 spent on construction during the 10-year period from 1946 to 1955 had been raised through stock and bond issues and accounted for almost one-quarter of all equity financing in Canada during that period.

Despite this large construction effort, "we have by no means accomplished all that we might have wished to by way of meeting demands for services — and we anticipate spending a similar sum during the five years that will take us through 1960," Mr. Eadie said.

General of Southeast Advances Johnson

J. E. Johnson, general commercial manager of General Telephone Co. of the Southeast, Bluefield, W. Va., has been appointed general commercial supervisor of the Southeastern group of General operating companies, according to an announcement made today by H. E. Hussey, chief executive officer of General's Southeastern companies.

Mr. Johnson has moved to the Durham, N. C. headquarters, and has joined the staff of Gordon Saunders, general commercial and traffic manager. In his new position Mr. Johnson will supervise commercial activities.

Mr. Johnson began his telephone career at Lansing, Mich. in 1927, moving in succession to Grand Rapids, Hastings and Howell, Mich. In 1947 he joined General Telephone at Lafayette, Ind., where he filled increasingly important commercial assignments until his appointment in 1954 with General of the Southeast.

Truck Applications

SIX-PAGE utility application brochure from Four Wheel Drive Auto Co., highlights over 20 custom-engineered utility applications of FWD four and six-wheel-drive trucks.

The brochure describes FWD's "D" type power takeoff, for short, simple linkage to auxiliary units in utility operations, and its power-proportioned all-wheel-drive design, which provides maximum traction by sending engine power to all four or six driving wheels in direct proportion to vehicle weight distribution.

KELLOGG UNIVERSAL LINE RELAY BAYS and TWO WAY TRUNK RELAY BAYS

7 each Trunk Relay Bay-Two way for Universal or Toll Swbd. to C.B. or Magneto Exchange. Consists of 40 Circuits Kellogg Print #41886 mounted on rack wired to terminal and fuse panel at top of rack. Each circuit consists of D-2001SV Relay, 2003SY Relay, D-2081566 Relay, 132 Condenser and #19-A Repeating Coil. (Bay Height 7'4").

9 each Universal Line Relay Bays, consisting of 200 lines per Kellogg Print #41887, mounted on rack wired to terminal and fuse panel. Each circuit consists of 2093-CEA Line Relay and 2059-CDG Cut-off Relay. (Bay Height 7'4").

Kellogg #273 Spring Jacks, #13 designation strips and #34 Lamp Jacks available for use with Trunk Circuit equipment.

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The cartons are easier to handle than loose coils. They can be stacked higher without danger of falling and the wire on the bottom will not be crushed or bent. Space is saved, inventory taking is simplified, and the possibility of injuries to workers from tumbling coils is removed.

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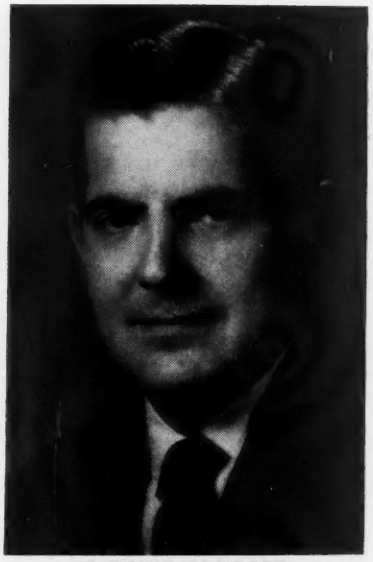
(Concluded from page 55)

Eastern sales manager, and to Warren Rolph, vice president and Western sales manager, will coordinate the sales efforts and materials be-



H. DUNCAN PRICE

tween the Eastern and Western areas. Mr. Price was with the Loomis Advertising Co as assistant secretary and assistant treasurer for 11 years. He formerly resided in Kansas City, Mo.

Automatic Electric Units Given New Names

THE NAME of International Automatic Electric Corp. has been changed to Automatic Electric International, Inc., C. S. Cadwell, president of International has announced. Automatic Electric International, a part of the General Telephone System, is distributor of Automatic Electric products abroad.

Two affiliates of Automatic Electric International also have been given new names. Compania Industrial de Telefonos at Bogota, Colombia, has been renamed Automatic Electric de Colombia, S. A.; and Automatic Telephones, Ltd., of Brazil, has been renamed Automatic Electric de Brasil, S. A.

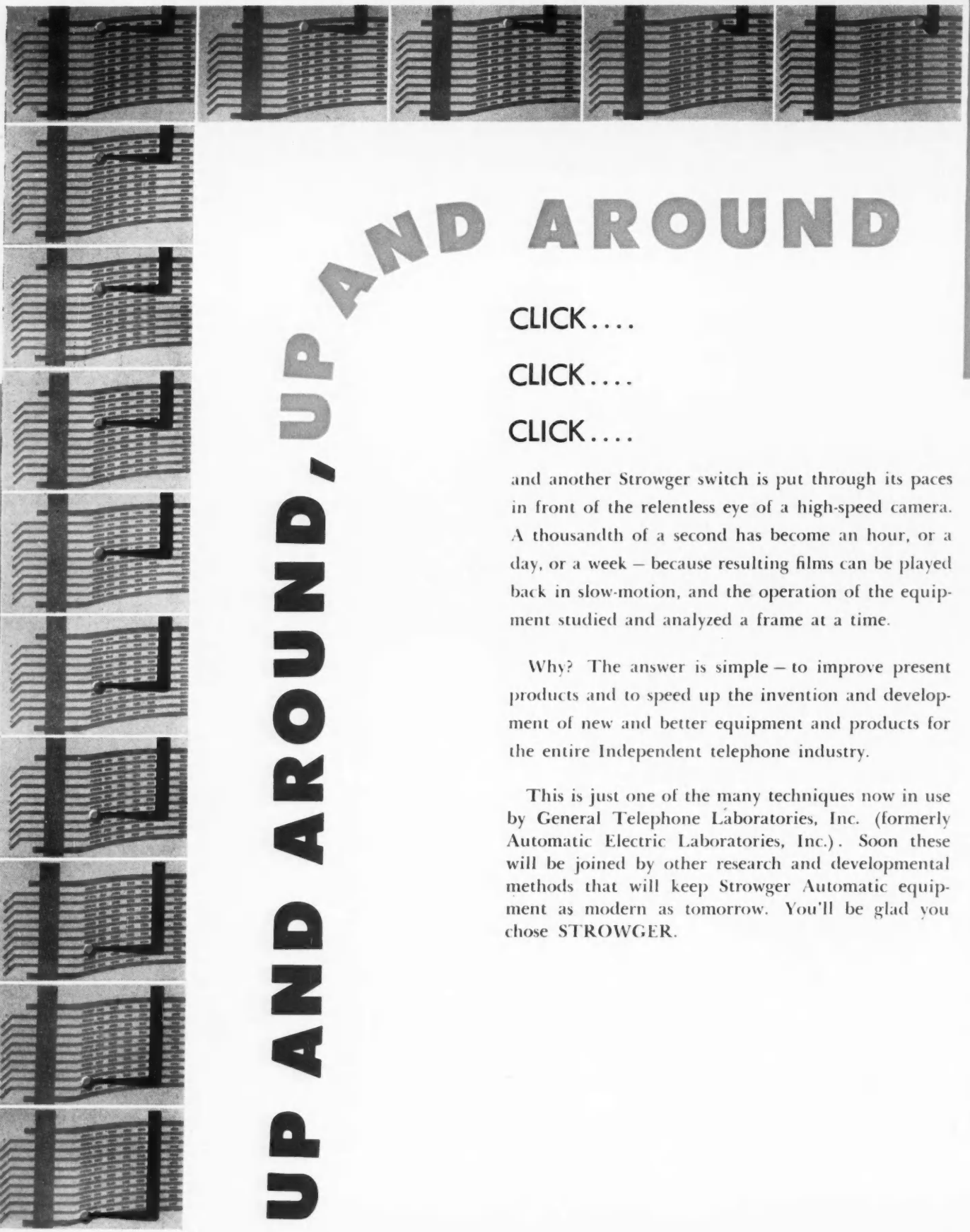
The changes in name are being made to identify these companies more closely with the Automatic Electric group.

Mr. Cadwell will continue as president of these two companies, J. P. Maclaren is vice president and manager of Automatic Electric de Colombia with offices at Bogota, and David C. Clegg is vice president and general manager of the Brazilian company with offices in Sao Paulo.

AUTOMATIC ELECTRIC TOPICS

JANUARY 1957
VOLUME 21
NO. 7

Special photographic techniques (such as the one illustrated above) can play important roles in research and development. *(See next page)*



UP AND AROUND, UP AND AROUND

CLICK....

CLICK....

CLICK....

and another Strowger switch is put through its paces in front of the relentless eye of a high-speed camera. A thousandth of a second has become an hour, or a day, or a week – because resulting films can be played back in slow-motion, and the operation of the equipment studied and analyzed a frame at a time.

Why? The answer is simple – to improve present products and to speed up the invention and development of new and better equipment and products for the entire Independent telephone industry.

This is just one of the many techniques now in use by General Telephone Laboratories, Inc. (formerly Automatic Electric Laboratories, Inc.). Soon these will be joined by other research and developmental methods that will keep Strowger Automatic equipment as modern as tomorrow. You'll be glad you chose STROWGER.

5000th Telephone Cements

Long-Distance Friendship

At table: L. L. Glascoe, Supt., Telephone Dept. Municipal Utilities System; Mr. Jim Binkley; Mrs. Jim Binkley; Mr. F. H. Mapleton, Gen. Mgr., Municipal Utilities System.

A woman in Fairbanks, Alaska, mailed a check to "Municipal Utilities System, City," and it ended up on the desk of Bryant Horne, Personnel and Public Relations Director of Jackson, Mississippi—5000 miles away! Mr. Horne told the local newspaper about it; then mailed the newspaper clipping with the check and a cordial note to the officials at Fairbanks. And that's why the people in Fairbanks, Alaska recently called the mayor of Jackson, Mississippi!

The occasion was the installation of Fairbank's 5000th telephone – and a proud occasion it was. The telephone – an Automatic Electric Type 80, in Classic Ivory – was installed in the home of riverboat captain Jim Binkley. And for half an hour Mr. Binkley, Mayor Douglas Preston, F. H. Mapleton, Superintendent of the Municipal Utilities System, and other Fairbanks citizens cemented friendly relations with Jackson's mayor, Allen C. Thompson.

The installation of the 5000th telephone was made possible by the recent expansion of Fairbanks' Strowger Automatic exchange from 4500 to 6500 stations capacity. The exchange has grown to this size from its original 2200 telephones when the dial equipment was placed in service in 1951.

Lorain (Ohio) Telephone Company Gets Direct Distance Dialing

Back in 1917, when the number of telephone companies offering automatic service could be counted off by a 2nd grade pupil, The Lorain Telephone Company cut over to dial service – thus establishing itself as a company with an eye to the future. It has been famous for many years, too, for its ship-to-shore radio service on the Great Lakes – in which field it was a pioneer.

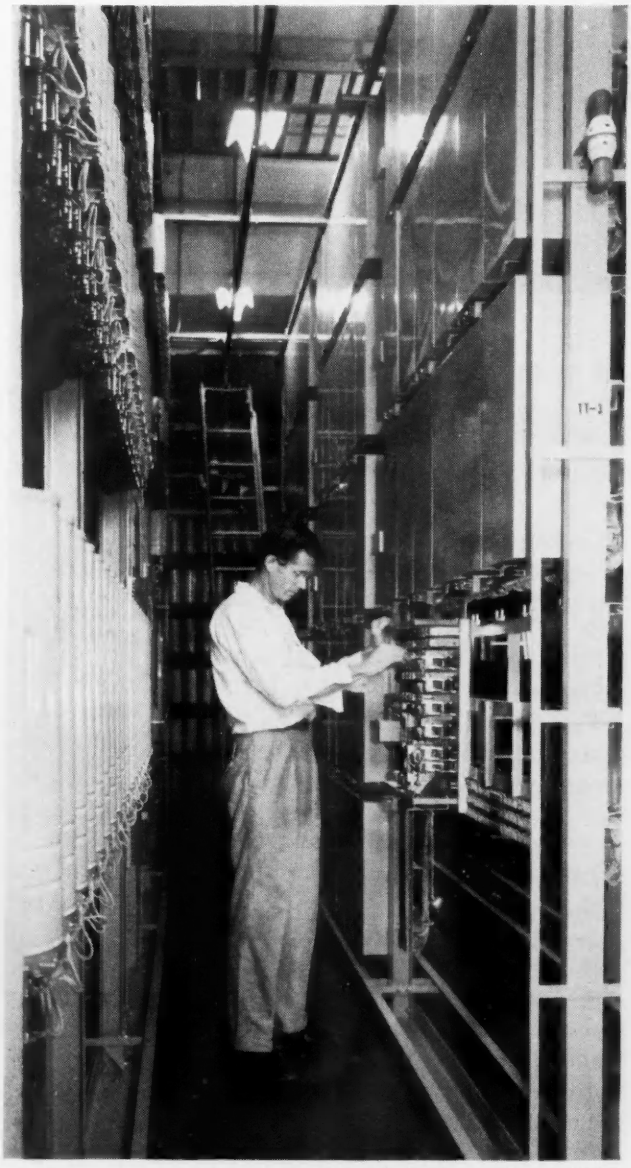
The latest step forward by this enterprising company was the addition of facilities to enable its subscribers to enjoy Direct Distance Dialing. In September, subscribers were able to dial Cleveland direct; in November, the service was extended to include any city in the country with Direct Distance Dialing facilities.

Needless to say, The Lorain Telephone Company is proud to offer this most up-to-date of services – and its subscribers are pleased to have the service available. As pointed out in a Lorain Telephone Company newspaper advertisement, Direct Distance Dialing seems to bring widely separated cities closer together, although the miles between the cities remain the same.

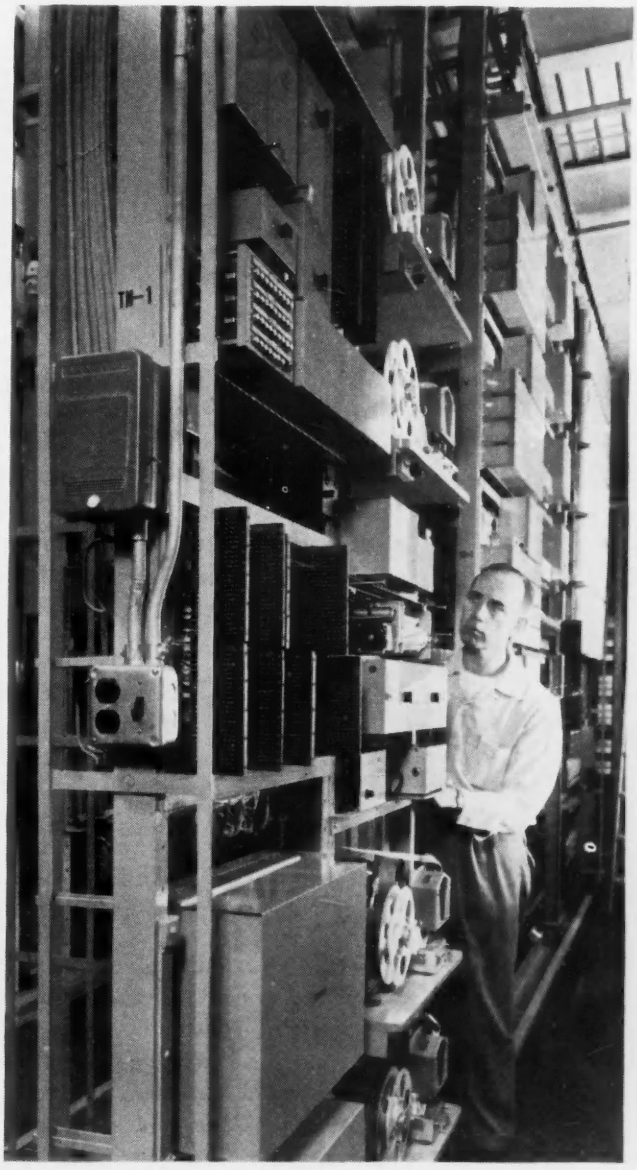
The Lorain Telephone Company, long a user of Strowger Automatic equipment, operates approximately 35,000 telephones through its exchanges at Amherst, Avon, Avon Lake, Birmingham, Lorain, Sheffield Lake, South Amherst and Vermilion. Like other major Independent companies throughout the country, The Lorain Telephone Company has enjoyed rapid post-war growth – and expansion continues. This progressive company confidently awaits the future, secure in the knowledge that it is providing the best possible service to its subscribers.

Subscribers at Lorain dial their own connections through the Type BD SATT System: an operator then comes into the call, merely to get the calling party's number and key it into the ticketer. Four positions of the SATT Operators' Desk are shown here.

The SATT Monitor Rack provides means for quickly checking the operation of every part of the SATT equipment.



Here a maintenance man, with his back to the SATT Selectors, is inspecting one of the SATT Ticketers. There are 40 Ticketers in this frame, and they all feed into four Tape Perforators.



The four Tape Perforators are shown here. Associated Tabulators are in the background, and Translators in the foreground, with Chronophers below.

OUR NEW SUPPLY CATALOG IS ON ITS WAY!

Within the next few days, Automatic's new Supply Catalog will be in the mail. It's a big, handsome book—almost 300 pages—and so useful that you'll want to keep it handy at all times.

EASIER TO USE Catalog 9000 makes ordering supplies easier than ever. An alphabetical index is located in the front of the catalog where it's easy to get to. It conveniently lists everything needed in telephone construction and maintenance.

Modern typefaces make for easy reading, and a plastic ring binder keeps the pages flat when the book is open.

MANY NEW ITEMS Over 2500 items are listed, including many new ones. Related supplies are listed together. Replacement parts and accessories are either listed with the item concerned, or page-reference and catalog numbers are given for quick location. The catalog is divided into twelve sections, each separated by a handy, tabbed divider.

The high-speed Pneumatic-tube system is completely enclosed within the Type 31 Toll Board, giving it an exceptionally "clean" appearance. The associated Rate-and-Route Desk is shown at the left.

Speed is the word

FOR NEW JAMESTOWN, N.Y., TOLL BOARD

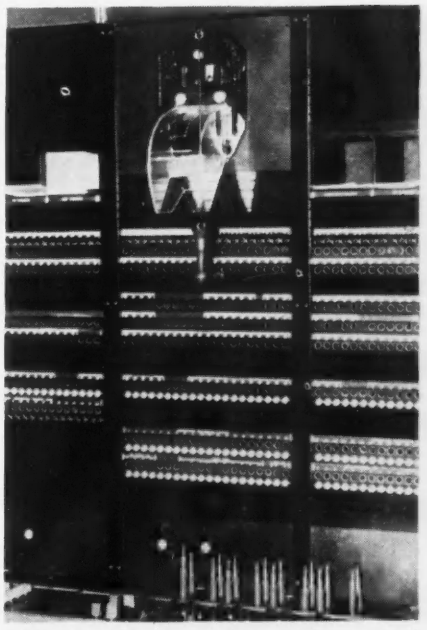
Telephone men visiting the headquarters of the Jamestown Telephone Corporation, at Jamestown, New York, are now seeing a new 32-position toll board of which the Company is rightfully proud. This newest installation of Automatic Electric's Type 31 equipment is designed and equipped to handle toll calls *fast*.

It has key-sending facilities that provide both multi-frequency and D.C. pulsing, and automatically select for each call the proper method of pulsing to fit the type of trunk being used; the operator simply plugs in. It has a Rate-and-Route Desk to speed information to operators and make it easier to sort toll tickets. It has a complete pneumatic tube system for speedy interchange of toll tickets. It provides visual supervision ("flash busy") on all toll and intertoll traffic, to speed up handling of calls by the Jamestown and distant operators.

With all these facilities, the board is ready to provide service at top speed. To assure that it not only *can*, but *does*, special operator training equipment is provided to enable an instructor to duplicate any conditions that might be encountered in day-to-day operation.

Monitoring devices permit supervision of key-sender operation at all positions. And, for the first time in the Independent field, "speed-of-answer" meters are provided; the traffic supervisors can check the answering time on calls, determine the grade of service being rendered, and take corrective action quickly when necessary.

To assure that modern transmission standards are maintained, primary and secondary test panels are provided for checking transmission levels on the toll trunks, as well as the operation of the toll board equipment.



This is the receiving valve of the pneumatic tube system, at one of the TX positions. Waiting tickets drop into the clear plastic receiver shown, when the handle is pulled.

MEMO

Dear Harry,

Saw something yesterday that reminded me of our early maintenance crew days 25 years ago. Driving home, I stopped to watch a crew working at the new housing development. Glad they weren't any of our gang. Sure, they had a fine new truck and a lot of gadgets that would make an old-timer's eyes bug out. But their method of melting lead was the same we used 'way back then. Reminded me of the time you spilled gasoline over your gear and had to keep away from the torch. Thought the stuff would actually freeze on you before it evaporated. What a wind! And cold? Wow! You didn't smell like a bed of roses either when we ate lunch at Smiley's. That cute waitress sure cut you dead. Makes me grateful for your suggestion that we melt <u>our</u> lead in a Mutual LP furnace with propane gas. There's no pumping...no priming...and no tricky adjustments. Sure beats the old method, whether the thermometer is below zero or blowing its top. By the way, Automatic Electric's representative will be in to see you today. While you're talking over our supply needs, make sure we have enough Mutual LP furnaces for our new crews. You can't beat propane for convenience and safety. Saves us a lot of money by doing the job quicker, too.

John

P.S. Did you ever get back to see the waitress at Smiley's?

Those Mutual gas cylinders look as neat as my new thermos jug!

Published by

AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE

Chicago, U.S.A.

Walter Axelsen, *Editor*

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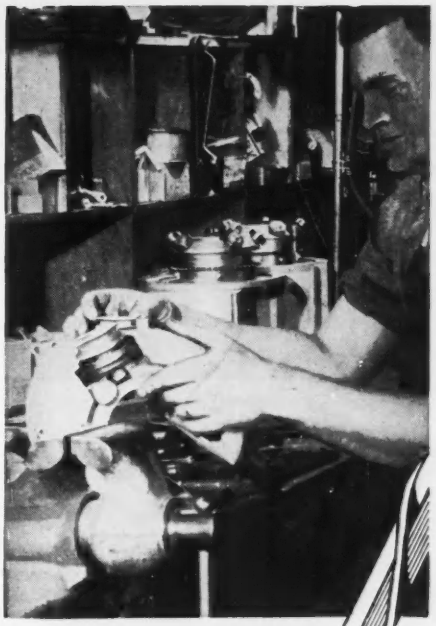

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THE BACK OF THE BOOK

By JOHN G. REYNOLDS

"Way To Keep Busy"

FROM Montreal, by way of the *Bell News* we've picked up another story to add to our collection of "curiousity-killed-the-cat" yarns.

This one concerns a guard who had a detail of prisoners working on the highway. One man, who claimed to be a skillful climber kept begging to be allowed to climb a near-by pole. Finally getting consent he skinned up easily enough, wrapped his legs around it, took out a pencil and paper and wrote something, rolled up the paper, and placed it in a hole at the top.

During the afternoon all the prisoners asked and were given permission to climb the pole. Each one took the paper, read it, and carefully put it back without a word.

After work the curious guard climbed the pole and found the note. On opening it he found these words: "*Notice to all climbers: This is the end of the pole.*"

"This Clears It Up"

IN CASE you have wondered if the American slang term "*phony*" originated from the early days of the telephone, reflecting skepticism about the practicality of Dr. Bell's invention, rest assured it didn't.

In order to answer that one, the editors of *Long Lines* dipped into Webster's New World Dictionary of the American Language. Here is what they found:

Phony is said to be an alteration of the word "Foney." That was the name of a manufacturer who at one time made brass rings which were sold by street peddlers. Hence, cheap jewelry, not genuine, counterfeit or — in a word — *phony*.

True Life Story

IF YOU have to wait in line for your family telephone we can tell you a census of fellow sufferers would reveal you have plenty of company. For example we've just heard about a wife who had the unfortunate habit of monopolizing the telephone. One time, the story goes, the harassed husband, who was expecting a business call, waited patiently on the window seat while his wife conversed endlessly.

When a pigeon fluttered down on the window sill, the husband glanced at it hopefully and said, "*Any message?*"

Young Stockholder

TEN-YEAR old Ronald Schmidt, a fourth grader at Beaverton, Ore., has given a unique twist to the saying about "*beating swords into plowshares.*" Ronald, in effect, has *turned a hoe blade into a stock share.*

Last summer he toiled on the business end of a hoe, weeding holly for a florist. After his earnings had mounted to $20, he reached the decision that was to make him the youngest of West Coast Telephone Company's 6500 share holders.

His father, Richard Schmidt — a garage mechanic for West Coast Telephone told the story at Beaverton, last month, while Ronald stood by to check the facts.

Schmidt, Mrs. Schmidt and Ronald, it seemed, had devoted serious discussion to ways and means for putting part of their income to work where it would produce the best possible results. Ronald, his brothers Michael, 8 and Greg, 4, — and even 2½-year-old Dean — liked nothing better than to "play telephone man." The two older boys, in fact, developed almost professional prowess in climbing telephone poles.

So when Schmidt ventured the opinion that "there's no better investment than an investment in the company that employs you," he struck a responsive note. In what was the first securities transaction for father as well as son, they obtained 10 of the 1,000,000 shares of West Coast Telephone stock outstanding in the hands of the utility's 6500 share holders, most of whom live in Oregon and Washington.

And the idea is apparently contagious as far as the Schmidt family is concerned. Michael has gone into business for himself, raising fryers and saving for the day when he'll depose Ronald as the youngest investor in West Coast's stock.

"Words of Caution"

WE WELL realize, right along with you that keeping safe isn't funny. But some of the words of caution seem so to us. For instance:

"*The safest place to fall asleep at the wheel of a car is at a drive-in movie.*"

"*Recreation is all right — if you don't try to wreck creation.*"

"*Some cars have fluid drive, others just have a drip at the wheel.*"

"*If your wife wants to drive, don't stand in her way.*"

"Bills In One Basket"

A SOUTHWESTERN Bell business office supervisor reports receiving the following letter from a customer who owed a two-months' bill:—

Dear Sir: — In regard to your statement, August 11, I wish to state that I pay my bills once a month, but most of the time I don't have enough money to go around. So, to be fair to everybody, I put all the bills in a basket, shake them up and close my eyes. Then I draw one bill at a time out of the basket and pay it, as long as I have any money left. That's fair, isn't it? Now. Sir, if you send me any more collection statements, I just won't put your bill in the basket. Your consideration will be appreciated . . ."

GUY-GRIPS eliminate clamps and reduce strand required . . . do not slip! Tests prove that even extra high-strength steel strand breaks outside the Guy-Grip when subjected to impact, repeated load or gradual tension. Save 50% installation time.

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for the Telephone Industry . . .

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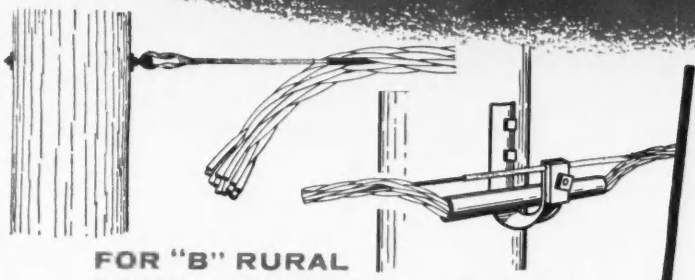
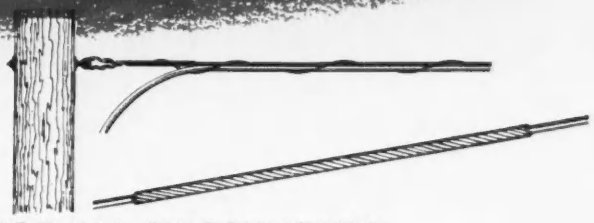


FOR "B" RURAL

PREFORMED DEAD-ENDS are the easiest-to-install, non-slip answer to dead-ending. Can be installed without cutting messenger.

PREFORMED ARMOR RODS protect insulated messengers against clamping pressure or abrasion damage.



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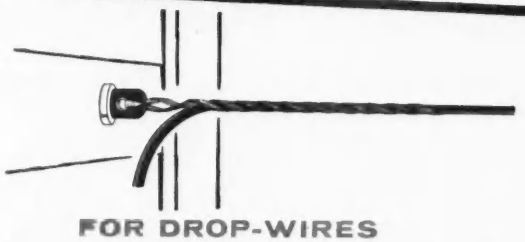

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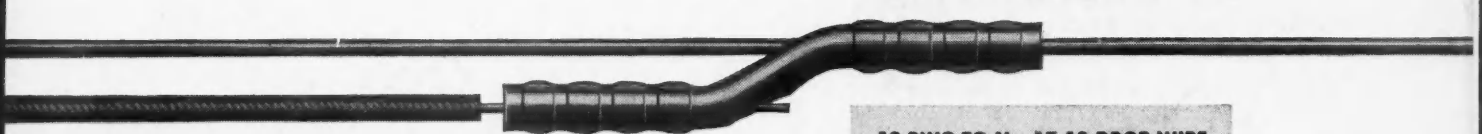

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